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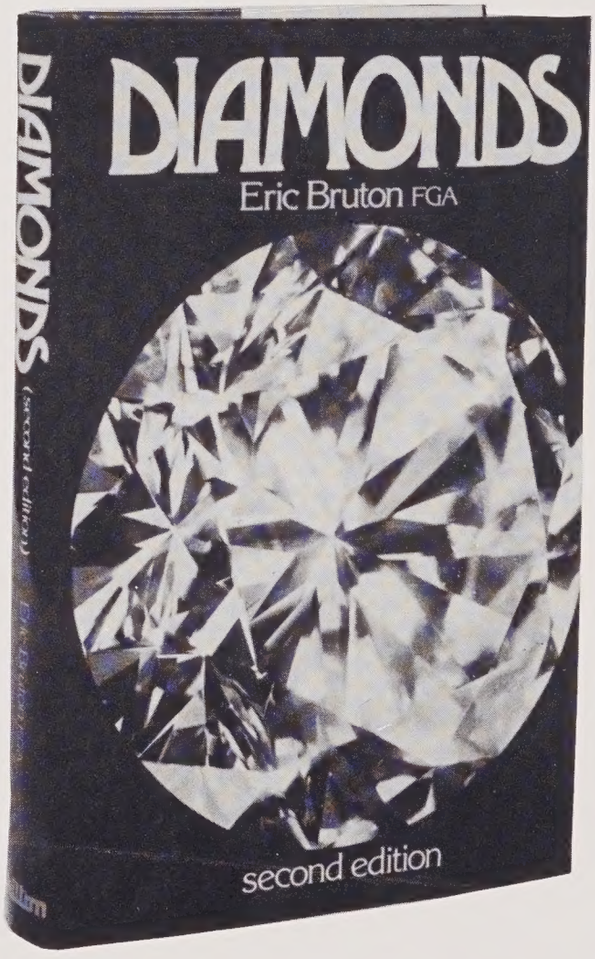

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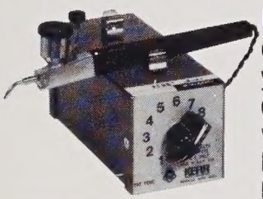

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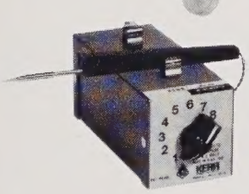

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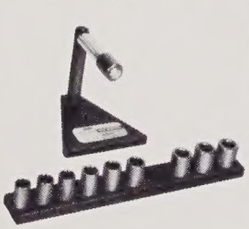

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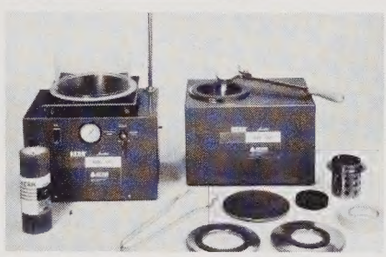

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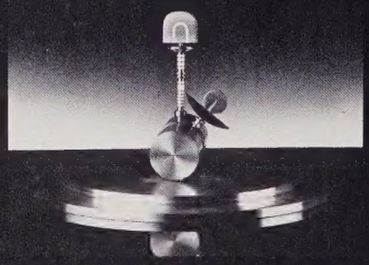

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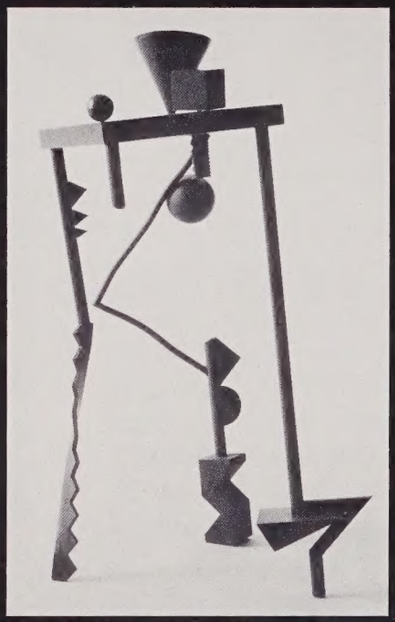

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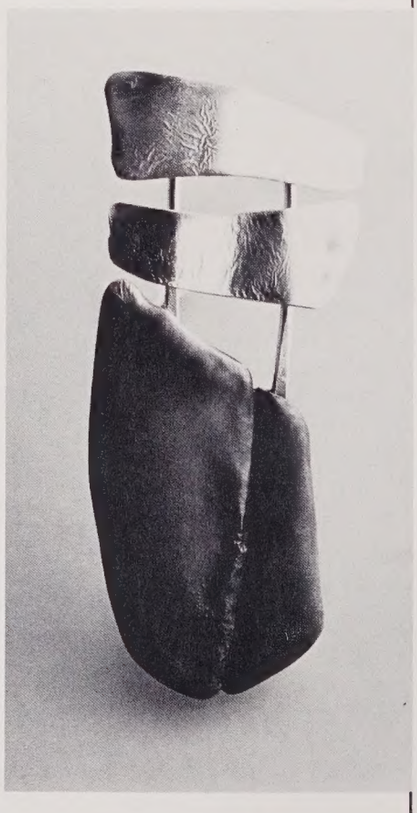

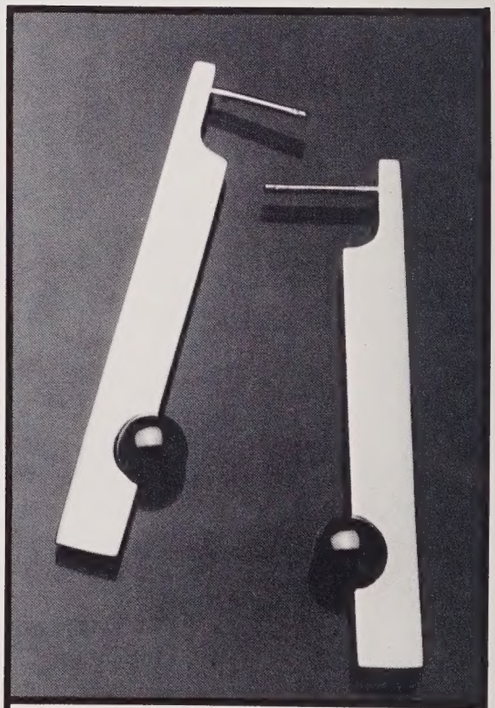

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Editorial

In this issue we are pleased to continue the tradition started in *Goldsmith's Journal* of showing work by graduating students in university jewelry and metalsmithing programs. The work represents well conceived and designed, technically masterful "personal statements," which have become the hallmark of contemporary American academic metalwork.

Presentation of this work invites questions about the education of the modern metalsmith and jeweler. Why are students permitted and even encouraged to spend hours on these personal statements? The designs presented here are one-of-a-kind—too complex and time-consuming for multiple production. Do students have the discipline, knowledge and business acumen to apply their design ideas in the "real world"? Does the real world want them?

"Design and the Jewelry Industry" was the title of a recent panel discussion, sponsored by Parsons School of Design in New York. The panel included representatives from the jewelry industry, jewelry retailing, the academic community and the press. Jewelry manufacturers represented here felt that students graduating from metals programs in the United States were "overqualified" for most production-line benchwork jobs. Moreover, to become a designer for a major jewelry manufacturer was extremely competitive. Irving Wax, of WaSko Gold Products, noted that in his company there are approximately six designers to 600 benchworkers. Other panelists pointed out that in production-line jewelry more often designs "evolve" rather than being originated by the manufacturer. Although Mr. Wax applauded the talents of designers, stressing that "every decent size manufacturer needs a jewelry designer, or two or three, but they don't know it yet," the prospect of industry providing jobs for the over 1,000 graduates of jewelry programs in this country each year appeared slim.

On the other hand, some independent jewelers have ventured into the commercial scene by exhibiting at the Jewelers of America shows. One, held last summer in New York City, boasted almost 7,000 exhibitors, of which perhaps two dozen were individual "original" designers. The trade magazine *Jewelers' Circular Keystone* reported that sales were up at this show and that the over 15,000 buyers were seeking out one-of-a-kind and high-quality limited-edition pieces. Buyers also showed interest in nontraditional materials, such as titanium and treated metals. Individuals can compete in jewelry trade markets, and this is an alternative to be seriously considered.

But do schools offer enough practical courses to allow a metalsmith to embark into business immediately after graduation? Are students aware of the "market"? How to promote work? And, most importantly, how do students know if their work is saleable? Should everyone who graduates be offering work for sale?

Teachers may argue that five years after graduation a jeweler will look back on college and graduate school as time without pressure to produce and sell, as the most creative moments, now lost to managing a business and attending shows. Is there a danger in pressing students to study business during a time traditionally set aside in liberal arts courses for discovery, experimentation and learning?

The dilemma is ever-present, but its significance is more strongly felt as metalsmithing programs continue year after year to graduate exceptional students and fewer and fewer academic positions are open to them.

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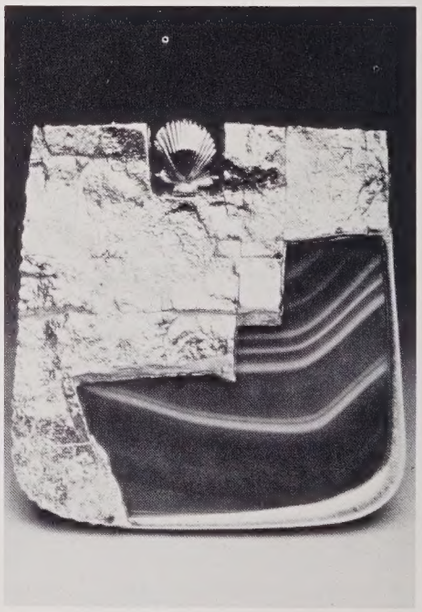

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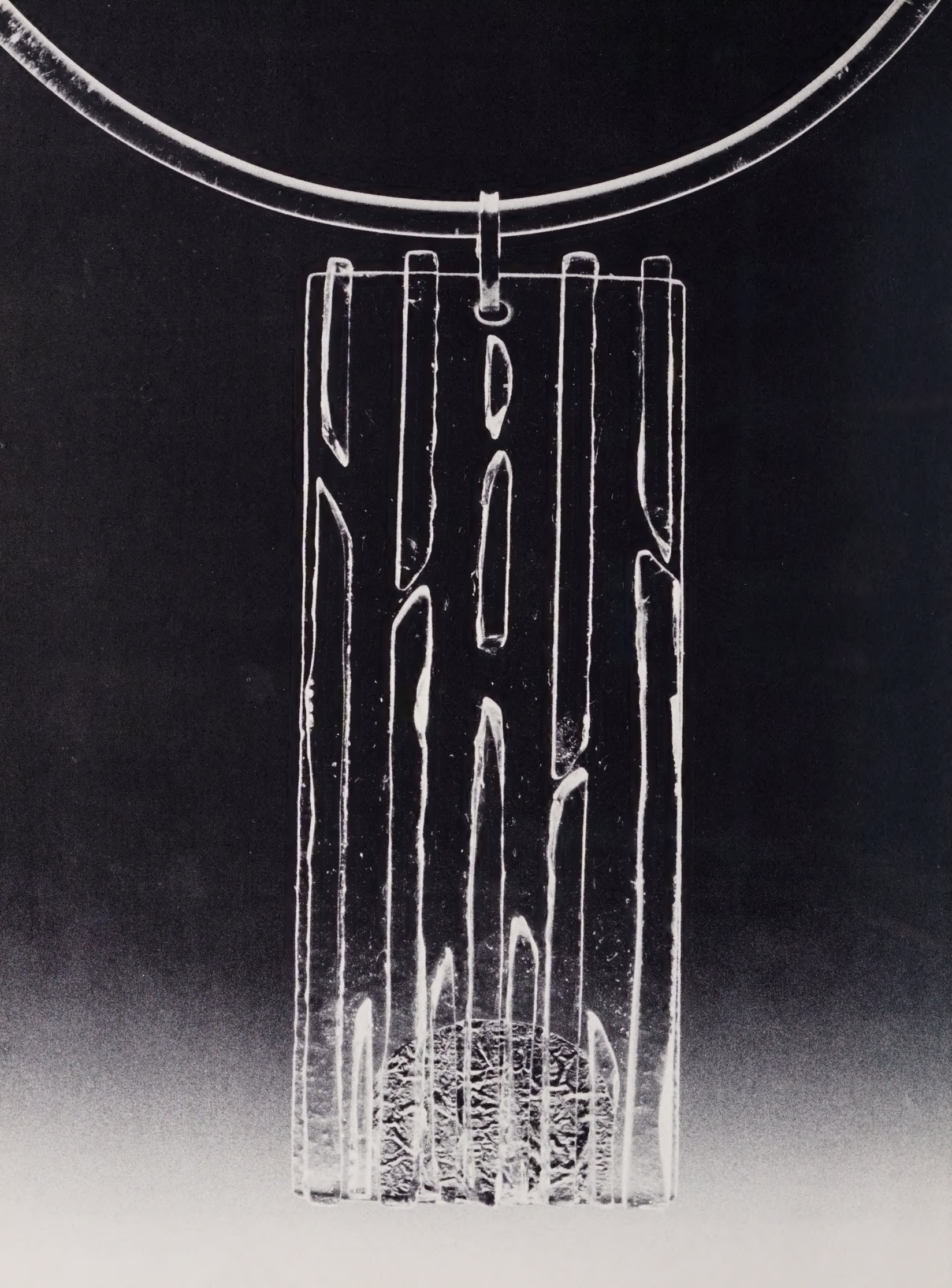


Margret Craver: A Vision for American Metalsmithing

by Star Miller Sacks

Left: *Solar-Lunar Series 5*, enamel, glass and gold **Above:** *Silver Bonbonnière*, 1938, which won the First Award at the Philadelphia Art Alliance show and *Teapot*, 1937?, shown at the World's Fair, San Francisco, both designed and made by Margaret Craver.

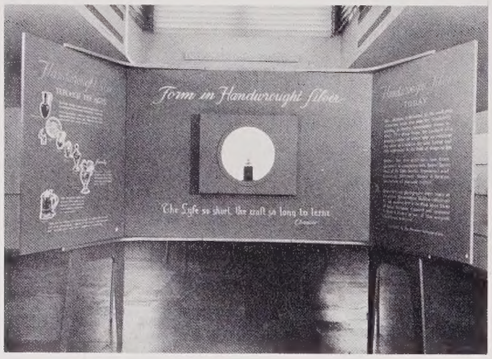
Margret Craver is in many ways a remarkable person. Her ability to identify an affinity, plot a course and hew to it are exemplified in both her personal pursuits and her service to her craft. Her low profile, coupled with the time-consuming nature of her recent work, has kept her from the public eye. The current accessibility of opportunities to study metal design and technique sometimes obsure the major role she played in the renascence of American metalwork.

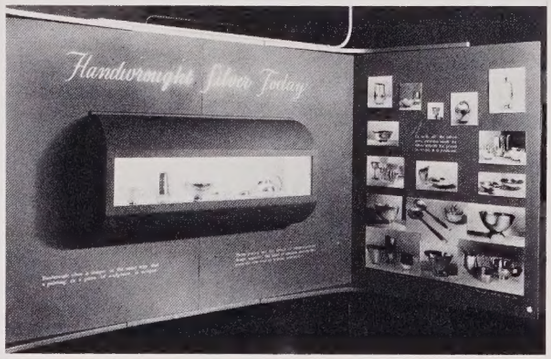
Early in her art school training, Craver identified metal as her medium. Her introduction to different materials left a vivid and tactile memory: she still has not forgotten "that wet stuff—clay." And while she retains the feeling that bookbinding might also have satisfied her needs for expression, she has no doubts that metals provide the best vehicle. Bookbinding was a peaceful pursuit; metalsmithing was "not peaceful—but compelling!" Indeed, Craver's attraction to metalsmithing must have been almost instinctive, given the state of the art at the time: Her first teacher didn't know how to solder. Metal programs were general and vocational. The library provided only two instructional books in English, neither of them much good. The availability and choice of tools were limited, and the tools themselves were of poor quality and design.

Upon graduation, she recognized that what she required for her own growth in the metals field was not available in the United States, but was in Europe. In the early 1930s she was fortunate to study in the atelier of Baron Erik Fleming. In addition to developing her skills, she was impressed by the educational presentation of the handmade crafts. In Sweden, handmade and industrially produced objects in many media were displayed with comparative descriptions of the developmental processes (limitations of the machine, quality of individual handwrought objects, man hours involved and so on), along with the prices. This kind of display gave one the opportunity to understand what was involved in each process and to form a knowledgeable personal preference. The wisdom of such a presentation left an indelible impression on her.

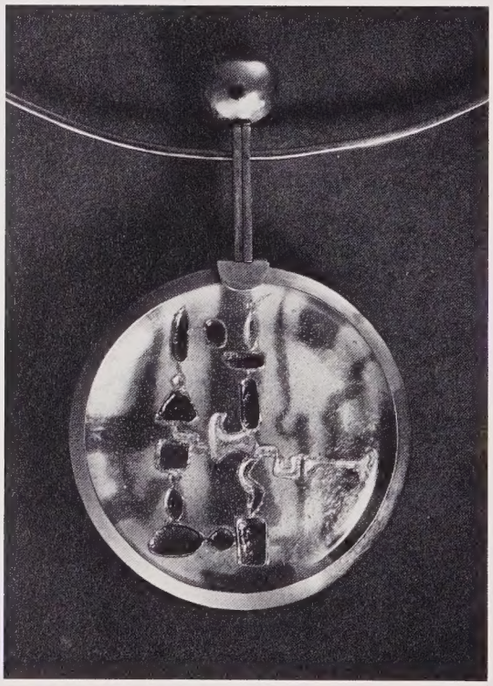
On her return to the United States in 1938, Craver took a curatorial and teaching position at the Wichita Art Museum. She submitted a piece to a craft competition at the Art Alliance in Philadelphia, the only opportunity for a metalsmith at that time. She was amazed when an early-morning call informed her that her *bonbonnière* had won first place.

During World War II, Margret Craver visited Handy & Harman, refiners and dealers of precious metals, in New York to check on the supply of silver alloted to her museum school. During that visit, she met Mr. Niemeyer, President of Handy & Harman. Her concern for the programs in occupational therapy at the armed services hospitals prompted a discussion with him. The rhythmic repeated motions characteristic of working in metal and the use of many muscle groups seemed to provide a natural way to retrain hand and upper-body musculature, as well as to provide the positive psychological effects of accomplishment. Niemeyer reflected on their discussion and then asked her to head a craft program for H&H. She became both a consulting silversmith and the originator and head of the Craft Service Department. In that role, she developed a prototypal rehabilitation program. She then approached the Surgeon General and his Chief of Occupational Therapy. Craver's force of character and enthusiasm have always been accompanied by thorough knowledge of the subject. In this case, the simple demonstration of the small cost in material of a silver pin she wore compared to the enormous cost of leather, at that time the most widely used material in occupational therapy programs, won her program overwhelming support.





Far left: Introductory panel from the exhibition "Form in Handwrought Silver" that opened at The Metropolitan Museum of Art in December, 1949. The exhibit traveled, first under the American Federation of Art in the United States and later under the auspices of the U.S. State Department to Europe **Left:** Panel from the "Form in Handwrought Silver" exhibition. All silver shown in the photographs and in the case (with the exception of the pot on the extreme right) was done by Handy & Harman conferees. All are the first metal pieces ever to be formed by them, although some conferees had worked in jewelry.



Email En Resille Pendant by Margret Craver. Art historian Joan Evans claims that this technique was invented in Paris in the early 1600s and was practiced for only a decade or so. This pendant includes painted enamel below the en-resille section.

She set up programs which were soon incorporated into the hospitals of the 13 commands in the United States, as well as Veterans Hospitals in the United States, Canada and Great Britain. At each point, reassessment of elements entered into her consideration. For example, while setting up a program for occupational therapists, she would have a patient/student working in the class. In this manner, she was able to design multipurpose hammers to accommodate the special needs of both hospital and patient.

By 1945, Craver had no doubt that the United States could and would lead the world in metalwork. She was still troubled by the lack of schools, books in English and tools. In her continuing work for H&H, she set about improving this situation. Perhaps her greatest contribution to her craft was the result of this effort: a series of five annual conference workshops for teachers of art, which were devised to study raising and holloware techniques. The month-long conferences for groups of 12 were held at the Rhode Island School of Design in Providence and the School for American Craftsmen in Rochester. Most of the participants had done no work with metal before. Outstanding H&H metallurgists shared their knowledge, and recognized European designer-craftsmen demonstrated and lectured in the programs. At the first conference in 1947, William Bennett of England taught; at the second, Reginald Hill; and at the final three, Baron Erik Fleming. Among the conferees were Fred and John Paul Miller, Earl Pardon, William De Hart and Navajo smith Dewey Dooley Shorty. Modestly, Margret Craver says the conference "gave them silver, hammer and a professional silversmith."

These conferences culminated in the exhibition *Handwrought Silver,* also sponsored by Handy & Harman, which opened at the Metropolitan Museum of Art in 1949. Photographs, educational material and descriptions of metallurgical aspects of the work were installed. Craver's early admiration for Swedish display design had not been forgotten. Some seven finished pieces, however, very nearly never appeared. A colleague Helen Fauver was checking the presentation just hours before the opening. Finding the finished work absent, she located the people who had installed the exhibit and tracked down the succession of events by which she guessed the work had been discarded with the packing crates. With the help of the packers, she retrieved the pieces at the loading docks and took them to the exhibition area with barely 10 minutes to spare.

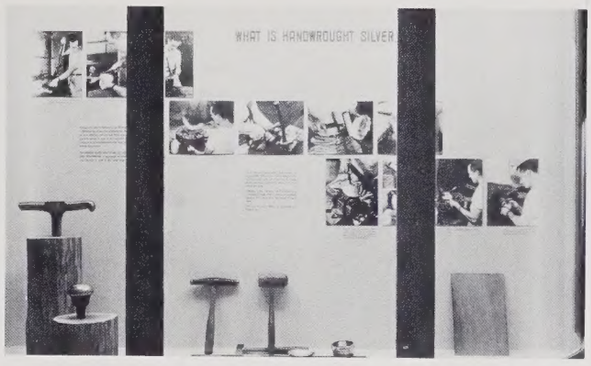
It was the first industrially sponsored show to be held at the Metropolitan. The entire show toured the United States under the auspices of The American Federation of Arts. Later the exhibit toured Europe, sponsored by the State Department. A demonstration film on raising and an informational booklet also resulted from the conferences.

The termination of her work with Handy & Harman marked a new beginning for Margret Craver. While continuing to employ metals, her major focus shifted to study—analysis of pieces and techniques of *en résille* enamels, an enamel without a metal backing with enameled metal elements "floating" on its upper surface. The academic pursuit of identification accompanied the experimental pursuit of technique. Craver discovered that only some 15 pieces of this 17th-century French technique existed in museums, and no literature on it was available. Therefore she proceeded through trial and error to master the technique and incorporate it in her work. The work is so fragile and time-consuming to produce that her *en résille* pieces are generally only available on commission. Consequently, her recent work is rarely exhibited.

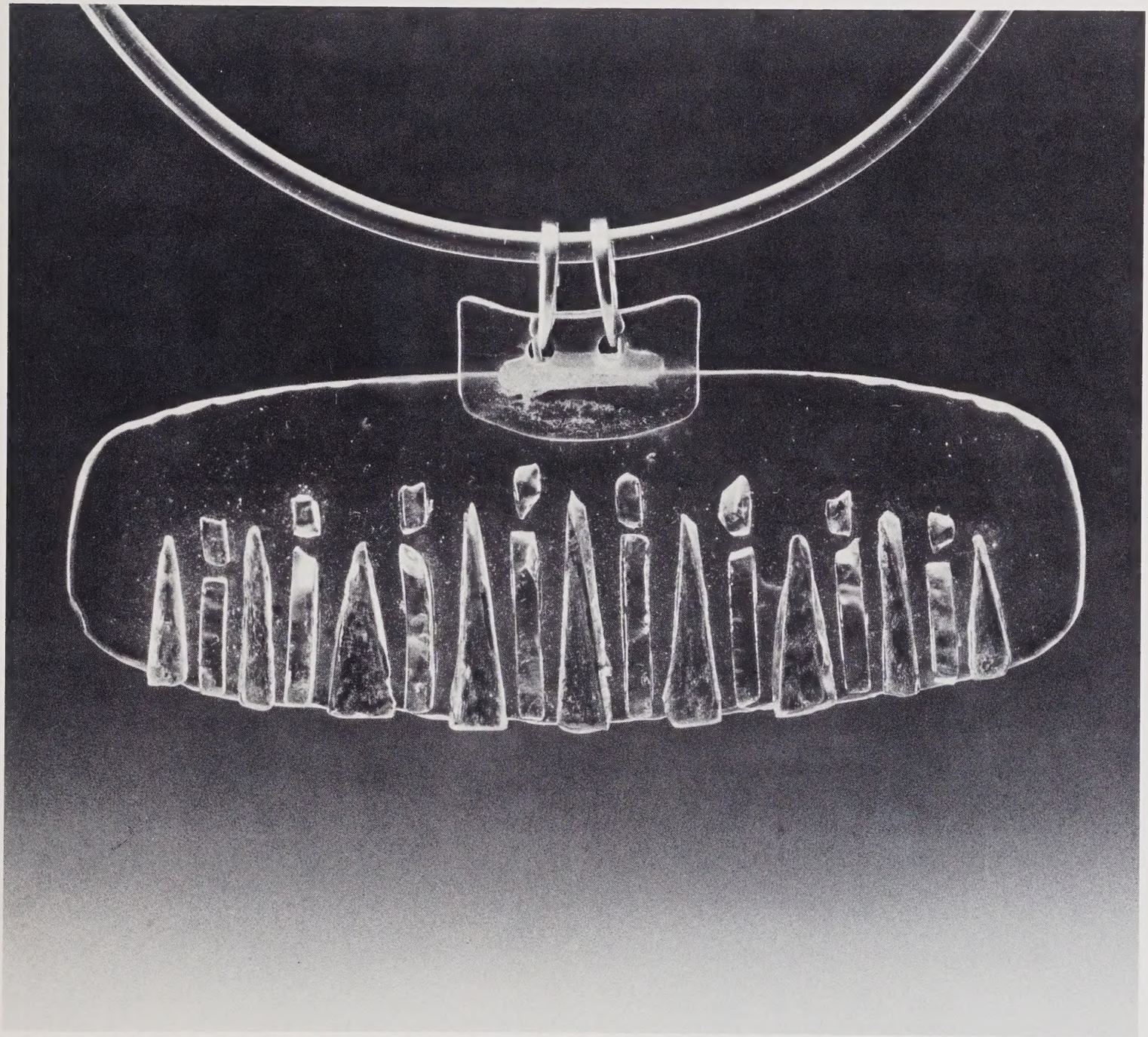
In the past three years, Margret Craver has again addressed a new direction. Armed with her experience in *en résille,* she has developed her "Solar-Lunar Cosmos," a series of 12 glass-enamel crystals with gold or silver foil inclusions. They capture the brilliance of crystal, without any "coldness." Each "crystal" is unique; it is suspended on a custom-molded vinyl band to be worn as a neckpiece. The collection is a complete statement—there will be no more "Solar-Lunar Crystals." It shares the carefully punctuated character of each phase of Margret Craver's career: carefully conceived, thoroughly explored, meticulously executed and complete in itself.

It is perhaps premature to speak of Margret Craver's contribution while she is so vitally involved in pursuing her craft. However, one can attribute the renewed dignity and independent expression of current American metalsmithing and jewelry directly to her efforts. Her vitality has stimulated others to realize her vision of excellence for American metalwork. We share her joy when she says that now "the finest metalwork is being done here in the United States."

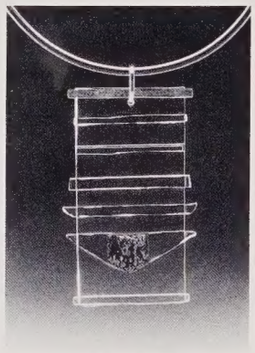
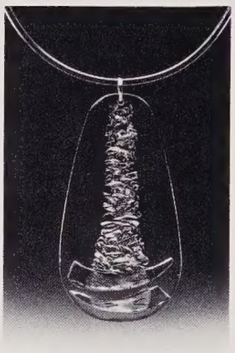
Star Miller Sacks is a freelance writer and co-owner of The Hand and The Spirit Gallery in Scottsdale, Arizona, which has been engaged in presenting fine crafts with a strong metals component for more than eight years.



Far left: Booklets written by Margaret Craver. *Silver for the Craftsman* includes selected technical information from industrial research pertinent to working metal by hand. *Handwrought Silver* and *Contemporary Silversmithing* show two opposing ancient metal-forming techniques step-by-step. The latter two grew out of Handy & Harman's conferences and movies. The *Jewelry* booklet was written to aid the occupational therapy program in U.S. Service hospitals. Photo: Robert M. Aude **Left:** "Form in Handwrought Silver" exhibition installed in the Rochester Museum of Arts and Sciences



Solar-Lunar Crystals by Margret Craver, 1981. These are one-of-a-kind pendants made of enamels, glass, 18k, 22k and 24k gold and silver. Each loop from which the pendant hangs is designed as part of the total and to avoid detracting from the crystalline quality of the pendant contains no metal clasps. Photos: Robert M. Aude **Above:** *Solar-Lunar Series 10*, enamel, glass and silver

From left to right:
Solar-Lunar Series 12, enamel, glass and silver
Solar-Lunar Series 3, enamel, glass and silver
Solar-Lunar Series 2, enamel, glass and silver
Solar-Lunar Series 6, enamel, glass and silver
Below: *Solar-Lunar Series 8*, enamel, glass and gold

Artist's Statement

Why should a craftsman change from goldsmithing to enameling? It does not seem unusual for painters to move to etching or lithography, and when they are back again they say that they have gained a wiser or deeper view for their painting.

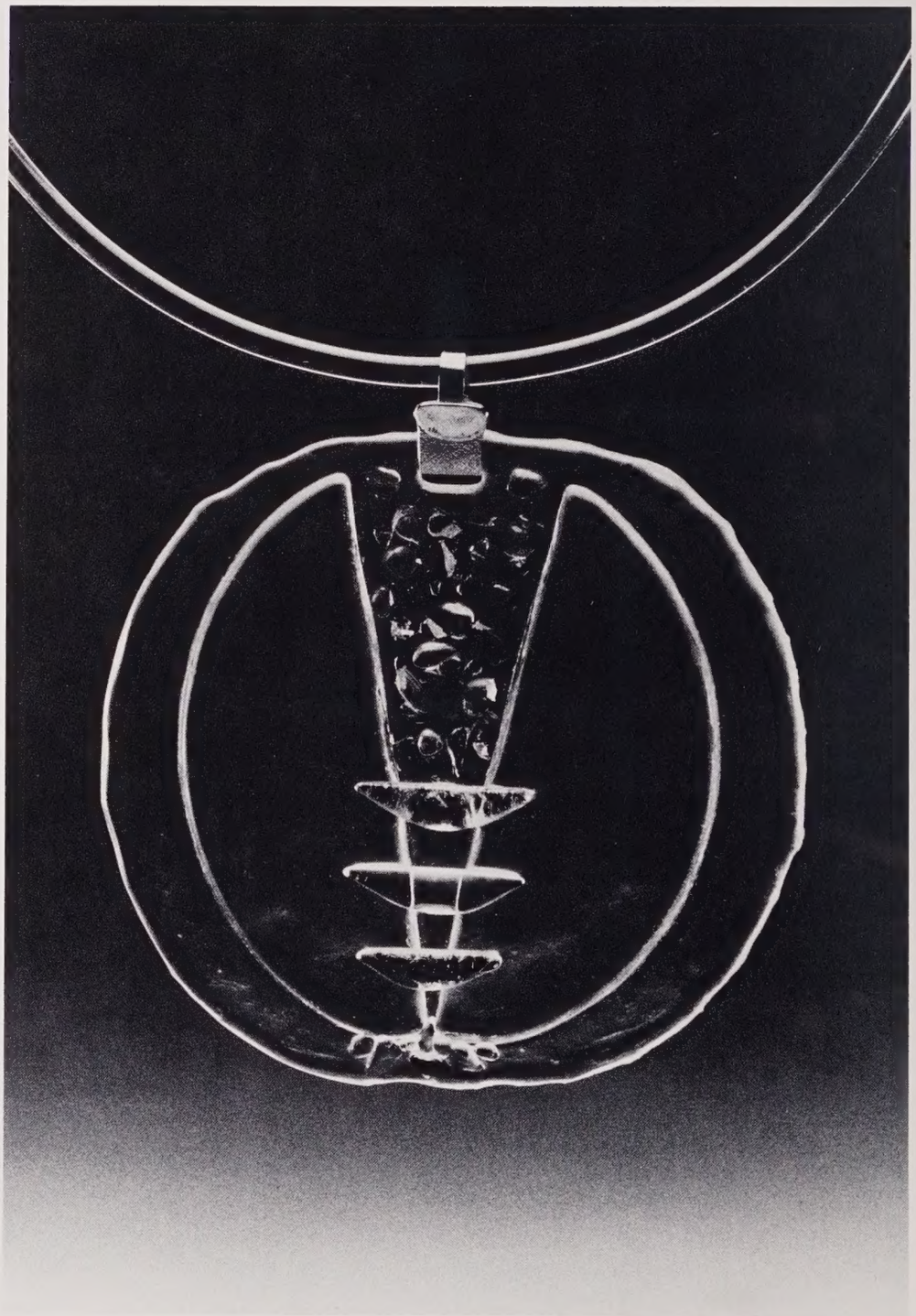
My first change over from silver to gold was a practical matter and had to be dealt with primarily in the field of color, because the tools, equipment and processes remained much the same. But enameling was very different and came about through my being fascinated by one rare piece of en résille *enamel done in the early 17th century. There was no literature to be found on this subject, so I had no choice but to approach this haunting medium empirically. Some years went by during which I was single-mindedly absorbed before there was modest success. I look back now on that period as a long walk alone in an unknown forest.*

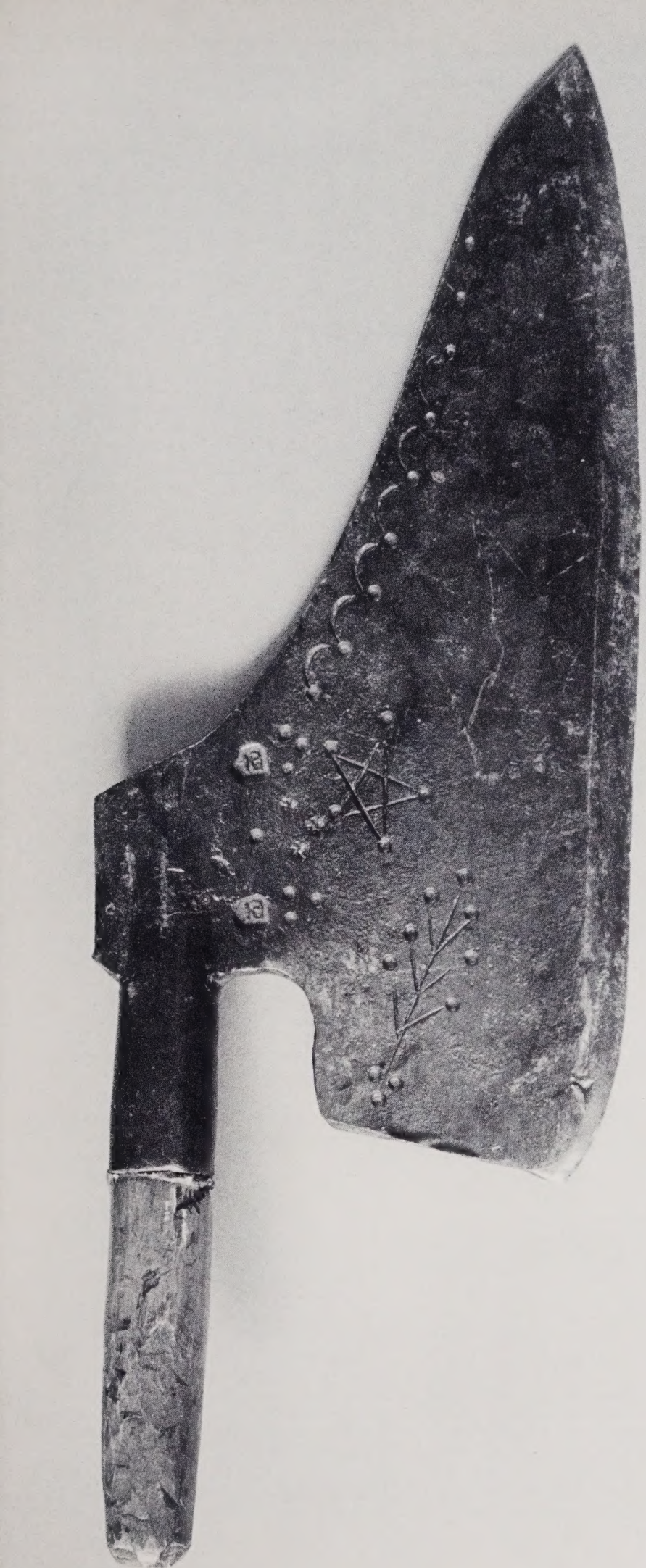
The work in this exhibition of crystals follows no tradition, I believe. It came about by my going to the studio as usual one morning. I do not know how other people describe their creative process but mine often begins with a feeling of infinite space and unlimited time. Images start to form; they may combine or grow and finally complete themselves.

On this occasion it became apparent that the medium was a transparent one which brought me back to my earlier absorption with the colorless stage of en résille.

I was very eager to move into the technical process which would test the validity of the original concept and make it into a reality. So it was that my first solar crystal came forth and opened up completely new avenues for exploration.

—Margret Craver comments on her "Solar-Lunar Crystals" on the occasion of their exhibiton at The Hand and The Spirit Gallery, December, 1980





The Toolmaker's Art

17th–19th century European Tools from the Collection of Jan Firch

Photos by Michele Smith, unless otherwise noted

The tools shown here were part of a major exhibition organized by the Flint Institute of Arts in Flint, Michigan in the spring of 1981. The exhibition was comprised of part of the extensive collection of antique handmade tools owned by Jan Firch, a Czechoslovakian-born collector, who now lives in Paris. The essays that follow are reprinted from the catalog of this exhibition with kind permission of the Flint Institute of Arts.

Toolmakers as Artists

by Dr. Richard J. Wattenmaker, *Director, Flint Institute of Arts*

Although we live in the present, mankind takes pleasure in the tangible legacy of the past, the random surviving artifacts of earlier cultures and those which we have elected to preserve from our own. In the never ending quest to refine perceptions and clarify values, this exhibition of three centuries of the toolmaker's art provides an invaluable opportunity to see a collection of rare breadth and quality. These iron and wooden tools convey a virile grace which is inextricably bound up in the substance of the materials. Their intrinsic appeal has been enhanced by accumulated wear from generations of use and the variety of smooth or mottled patinas which both age and oxidation have produced on their surfaces.

Our ancestors cherished a sense of unity with their indigenous surroundings and at the same time held dear what was man-made. The abundant esthetic possibilities in everyday life provided the craftsman with endless stimuli. The objects which resulted exemplify facets of human creativity and we may gain through their study a special appreciation of the psychology and culture of our forebearers. Simplicity and ingenuity were fused in forthright, practical creations which expressed an alertness to both physical and conceptual proportions, decisive solutions to the challenging exigencies of life's practical tasks.

Homo faber (man the maker). By endowing the workman of the past with a mystical aura we obscure his real achievements and risk trivializing his essential

Left: *Goose Wing Broad Axe*, Austrian, 16th–17th centuries, 55x20 cm, bit 40 cm, handle probably not original. The broad axe was used to hew and square timbers. In its most common form, the bit had a single bevel and the eye and handle were offset to prevent the axeman's hands from contacting the log.

role in society. As Lewis Mumford has made explict: "Over a large part of human history... the tool and the object, the symbol and the subject, were not in fact separated. All work was performed directly by human hand, and that hand was not a detached hand, a specialized hand, it was part and parcel of a human being who, no matter how faithfully he followed his craft, had many other interests than the performance of work."[1] Artisans sought to simplify and thereby minimize monotonous aspects of hard labor. The blacksmith ingeniously accommodated the craftsman's exacting requirements, whether it was a slate cutter, cooper, joiner, stonemason, wheelwright, armorer or another of the guildsmen upon whom society placed its reliance for objects of manufacture, housing, transportation and other basic needs. The standards set by generations of empirical experience, trial and error under changing social and economic conditions, established a pride of workmanship which came to be expected of the seasoned master.

"... the operations were under the direct control of the craftsman himself. He took his own time about his work, he obeyed the rhythms of his own body, resting when he was tired, reflecting and planning as he went along ,lingering over the parts that interested him most, so that, though his work proceeded slowly, the time that he spent on it was truly life time. The craftsman, like the artist, lived *in* his work, *for* his work, *by* his work; the rewards of labor were intrinsic to the activity itself, and the effect of art was merely to heighten and intensify these natural organic processes—not to serve as mere compensation or escape... the fact that the handicraft worker is master of the process, so long as he respects the nature of his materials, was a great satisfaction and a support of personal dignity. The other reward of craftsmanship in many branches of art and technics was that the worker could pass, with further technical skill, from the operational to the expressive parts of his job. Through acquiring skill in technics, he became licensed, as it were, to practice art..."[2]

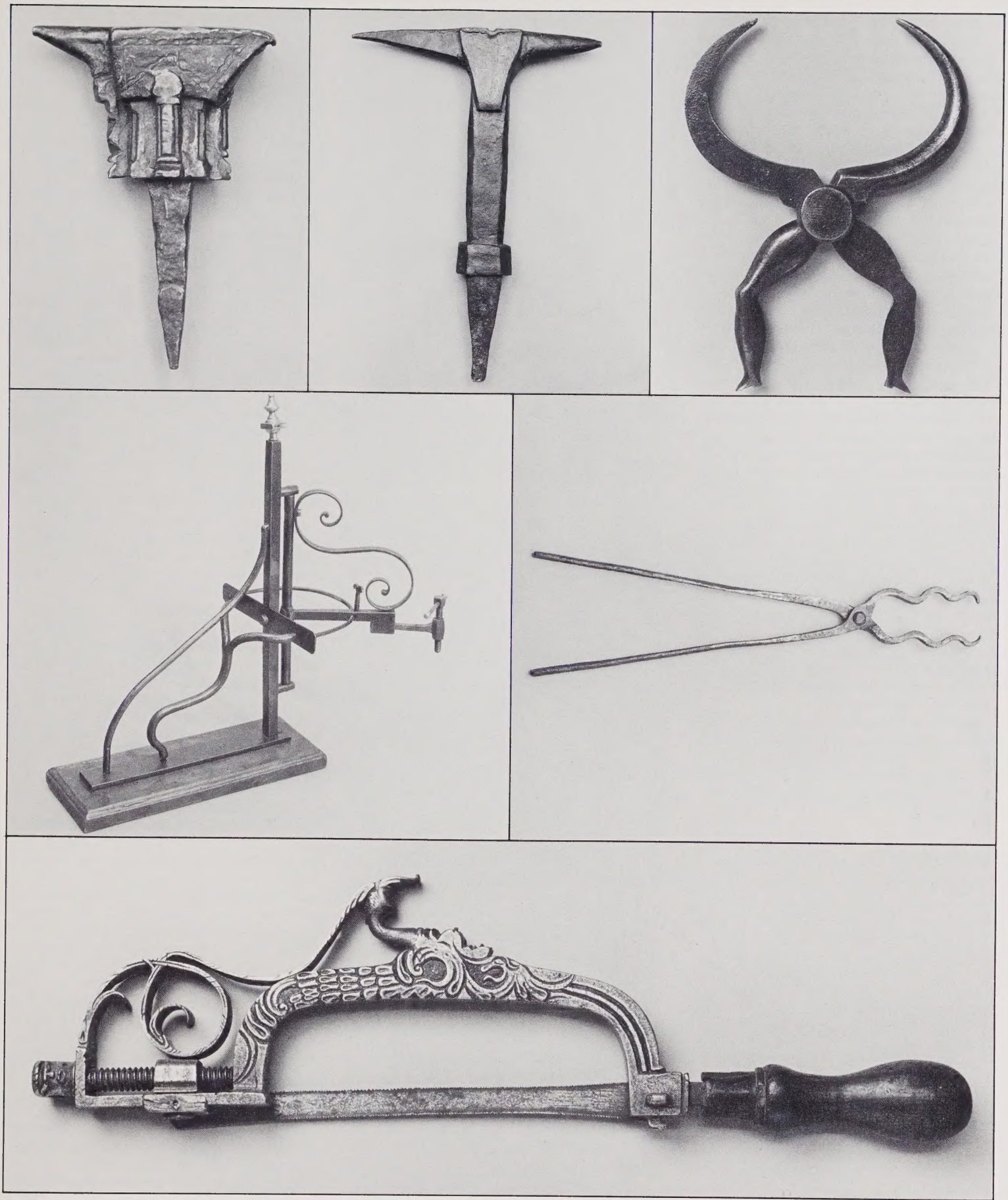
The interaction of method, material and tool is an important dimension of a well-rounded esthetic approach to the understanding of the finished object which is art. This unification reflects a reciprocity which Professor Cyril Stanley Smith has described thusly: "The desire to beautify the utilitarian has always stretched the ingenuity of the mechanic, who used complex devices to shape trinkets before turning to automobile parts or weapons."[3] Mumford has observed: "Even with the most sober kinds of tool and utensil, whose workaday requirements are not in the least enhanced by images, from the very earliest stages onward one sees the application of images and symbols, sometimes meaningful patterns connected with religious perceptions, sometimes purely esthetic elaborations, done for the sake of leaving a specifically human imprint on an object... that would otherwise seem too starkly cold for use, if the artist had not, so to say, set his special mark on it. Until our age, people felt, it would seem, that a work of technics was crude and unfinished unless the maker had embellished it with some reflection of his own life."[4]

Present day culture is one of specialization; relations with workmanship and firsthand knowledge of materials have gradually dissipated as has discrimination in evaluating the artifacts which we employ in our daily lives. Even though the everyday objects of previous eras—furniture, pottery, glass, metalwork, etc.—exert an increasing attraction as they are identified with a past we can never recapture, awareness of the means of their fabrication is tenuous. In this technologically developed period with its tacit encouragement of passivity, we risk dismissing as superfluous any compelling need for such intimate acquaintance. This cultural amnesia has also been countered by many amateur craftsmen that continue to work with hand tools, by collectors who accumulate and preserve them and by the formation of organizations such as the Early American Industries Association, the Association for Preservation Technology in Canada, the *Association ouviére des compagnons du devoir* in France and the Council for Small Industries in Rural Areas in Great Britain. In Japan, individual craftsmen themselves—weavers, blacksmiths, potters, papermakers and many others—have been classified by law as "living treasures."[5] It is no surprise that the great majority of these artisans were born around the turn of the century and are thus vestiges of an age and culture where time and work had a radically different meaning from that which developed in our own milieu.

A glimpse into the distant pre-industrial past is neatly provided by the records left in medieval and early Renaissance illuminated manuscripts which depict the trades of that time. *Building the Ark* (Fig. 1, p. 18) from the *Bedford Hours*[6], the work of a Flemish artist in Paris around 1420, illustrates a variety of workmen and their tools. Similar tools represented in Mathurin Jousse's *Le Théâtre de l'art de Charpentier*[7] (Fig. 2, p. 70) and corresponding examples here on display indicate that their forms were hardly altered over a period of 500 years. A workman, after an extended apprenticeship and stretch as a journeyman, attained full standing as a master craftsman and guild member. As products left the workshop, the tools remained. There was a hard-earned pride whereby the artisan both depended on and cherished the tools of his trade. Class society though it was, still several kings of France maintained their own workshops at Versailles. Louis XVI found satisfaction in working at various metalcraft and carpentry trades. The royal amateur, at his forge, executed keys, steel boxes and padlocks which he presented to his friends. In our exhibition there are axes, planes and saws with, in some cases, more than two sets of initials, as tools were handed down from one generation to the next and became identified with each. Closer to the present, we have the example of Picasso, whose father Don José turned over his own brushes and palette to his talented son Pablo at the age of thirteen.

The literature of technology is considerable and writers such as Mumford[8] and Smith[9] have subtly objectified the interrelations between technology and art as well as with the organizational development of society. There remains, however, cleavage between our perception of the finished product and the process of its formation. The finely wrought tools the craftsman uses in this formation have an esthetic appeal of their own that stems from their proportions, shape, texture, even heft and balance; each of these variables is employed by the toolmaker to make his instruments more than merely functional. In some instances, a stylized shape, the width of its cutting edge, its angle from the shaft, its tempering or fitness for a specific task, provides the sole decorative element; in others, engraving or carving in high relief forms a portion of the shape and function of the piece. A simple decorative volute may become the forward grip of a smoothing plane. Another plane, made of wrought iron, is neatly dovetailed in its construction, with a robust curvilinear profile to the forward grip and cold-chiselled turnings forming the guard for the wooden wedge which fixes the blade. Decoration ranges from the simple ribs which define the graded thickness of purposefully weighted and balanced axes and their related family of hewing and finishing bladed tools, to the three-dimensional carved and chased half-figure "siren" and threaded Janus-like terminal nut used to adjust the blade on the elaborate German metalworking saw dated 1685. Often, in addition to the floral flourishes or geometric motifs frequently used as embellishment, dates, initials and names (both of maker and artisan for whom the tool was fashioned), are also found.

In the 20th century we have seen a renewal in the art of sculpture. Sculpture was no longer considered a refined, imitative form of three-dimensional reproduction any more than painting after the revolution of the impressionists and their successors. A new appreciation for tools emerged as the arts of Africa and Oceania were perceived as vital sculptural traditions in which the undisguised evidence of the tool testified to the spontaneous expressive act of its fabrication. In African cultures such as the Dogon (Mali), it was the blacksmith himself who carved the wooden masks and ceremonial figures. Such modern sculptors as Constantin Brancusi (1876–1957) show respect for carving in both stone and wood where the intentional traces of the tool marks enhance rather than disrupt the total effect of the final work. A consummate craftsman with roots in the folk culture of his native Rumania, Brancusi created enigmatic totemic sculptures of elegance and sophistication. His *Endless Column* of the early 1920s was hewn out of wood with a broad axe identical to many in the exhibition.[10]



Top left: *Anvil*, Italian, 17th century, 44x32 cm. On the anvil's varied surfaces metals were shaped, decorated and welded. The anvil had two primary working surfaces: the flat top and the cone-shaped horn. A hole in the top (the hardy hold) received anvil tools which modified the anvil's surface. Hot metal was hammered over the hardys, whose chisel-like edges parted the metal. Shaping stakes, used alone or with matching dies, grooved, beaded, bent or tapered the metal. **Top center:** *Beak Iron*, Austrian, 18th century, 69x51 cm. This specially designed anvil was used most frequently to shape and rivet metals. Beak irons were common among tinsmiths, nailmakers, coopers and wheelwrights. **Top right:** *Dance Master Calipers*, French, 19th century, 11.5x9 cm. Calipers were used to measure, check, compare and transfer distances and inside or outside dimensions of shapes. **Center left:** *Table Drill*, French, late 18th century, 52x49 cm without brace. The table drill was intended to exert the pressure necessary to drill without the inaccuracy of the human body. A small brace was turned by hand, but it was held and pressure was supplied by the table drill. The forward section pivots on a half-round guide. The extension of the pressure screw and brace are regulated by a setscrew. **Center right:** *Blacksmith Tongs*, French, 18th–19th centuries, 69x8 cm. Tongs were used to pick up and hold hot metal while it was being worked. As with many other tools, they were often fashioned by the smith as needed for specific purposes. **Above:** *Hacksaw* (left side). This side is decorated with a siren carved in profile, which becomes three dimensional as it rises from the center of the frame. The highly stylized hair extends well past the forward member of the frame and becomes the support for the tensioning apparatus.

Brancusi was also a blacksmith and was photographed in 1915 forging a froe on his anvil.[11] Thus, a modern example, perhaps unique, of an artist-sculptor fabricating the tools of his trade. Julio Gonzales (1876–1942) a Catalan artist was trained in metalwork by his goldsmith father and later worked in a car factory where the techniques he learned for shaping and welding iron were applied to some of the most lyrical large- and small-scale iron sculptures of the modern era.

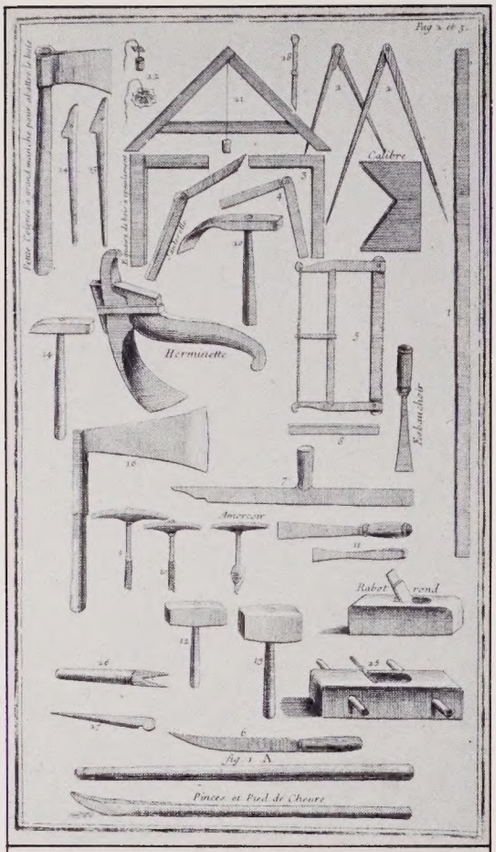
In the sculpture of two 20th century Americans, Alexander Calder (1898–1976) and David Smith (1906–1965), the "tooled" quality of their art becomes part of its esthetic character. The crisp cut-out profiles of Calder's decorative shapes convey the sense of shears and pliers. Smith was trained as a metalworker in an automotive plant before he was 20 and during World War II worked in a locomotive factory. He had as his studios complete ironworks. Perhaps more than any other sculptor of the modern era, he incorporated found objects, often actual tools, so that they became both means and a part of the structure of his sculpture. His assemblages establish new relationships, transvaluing the tools without modifying or concealing their original identity, an association which was important for Smith to maintain. The "Voltri" and "Voltri-Bolton" series done in 1962 are made up largely of tools—calipers, tongs, etc. of considerable dimensions—fashioned into complex sequences of two- and three-dimensional shapes with distinct anthropomorphic and poetic associations.[12]

European Tools from the 17th to the 19th Century affirms the spirit of creativity which tools have always served. We hope that the selection here offered will fulfill its purpose, stimulate curiosity and provide enjoyment.

Tools as Art
by Jan Firch

Twenty years ago in Europe very few people were interested in the humble pursuit of looking for old tools, and many of these collectors were Americans. The Early American Industries Association already existed, with a specific interest in the American tool tradition. Yet as far back as the pioneer days, the connection with European origins was evident; American collectors recognized it and European tools were sought after in this country before the bulk of European collectors began to take notice. Indeed, it would be curious if a nation of individualists did not appreciate the particular qualities of a handwrought European axe or other handmade tool.

From the Renaissance until quite recently only exceptionally fine, etched, blued and engraved tools were saved and preserved in collections. Many of these tools, made for kings and special people by the same master craftsmen who produced arms and armor, seem ennobled by the quality of their execution. One is tempted to question whether they were used much



Top: *Tool Drawings* from Mathurin Jousse's *Le Théâtre de l'Art de Charpentier*, 1702. **Above:** *Hacksaw*, detail.

at all. By the latter part of the 16th century, the Elector Augustus I of Saxony amassed a collection of some 8,000 of these precious artifacts which he housed in the Dresden Kunstkammer. Part of this collection is now displayed in the Historical Museum in Dresden, and examples were included in *The Splendor of Dresden* exhibition which toured the United States in 1978 and 1979. The south-German hacksaw included in the present exhibition, dated 1685, adorned with a naked female torso sculpted in iron, its tightening bolt a double-faced Janus head, is an outstanding example of this marvelous workmanship. Exquisitely made dividers, saws, hammers, braces and planes were collected along with other iron artifacts, such as volute-laden kitchen utensils, decorative chandeliers and sconces, andirons, locks, keys and scientific instruments of all types.

Humbler tools, made by unsophisticated, yet sensitive, craftsmen often for their own use, began to be collected only some 20 to 30 years ago, long after industrially produced tools dominated the workshop. The simplicity or loving embellishment of old, handmade tools struck some people, most of them not directly connected with the trades for which they were used. Other people, more technically minded, realized that the old methods of making things were astute, and that the tools with which they were made were interesting objects in and of themselves. Thus began the quest to save and record this disappearing legacy.

The vigor and creative genius which persisted in the craftsman's mind up to the mid-19th century was applied directly to his tools. Always handmade, sometimes carved and/or dated, and signed with initials, each piece was unique and different from others, made for the same use, in the same region, sometimes by the same workshop. Continental European planes of the 18th century, for instance, differ in this sense considerably from English or American ones. These vary only slightly in shape and size, the only difference being in the molding profile the plane cut or in the owner's signature punched on the heel.

It is fascinating to compare the inventiveness and endless variations in design which the toolsmiths produced. Even in a hundred examples, one could not find two identical axes of the same type, use or profile. They even employed patterns to shape the blade, varying its finish and its thickness, while its crested reinforcements swept downwards or upwards or ended in a scroll. Markings, initials and dates, all of which are personal, also constituted the one-of-a-kind character not to be found later in mass-produced tools.

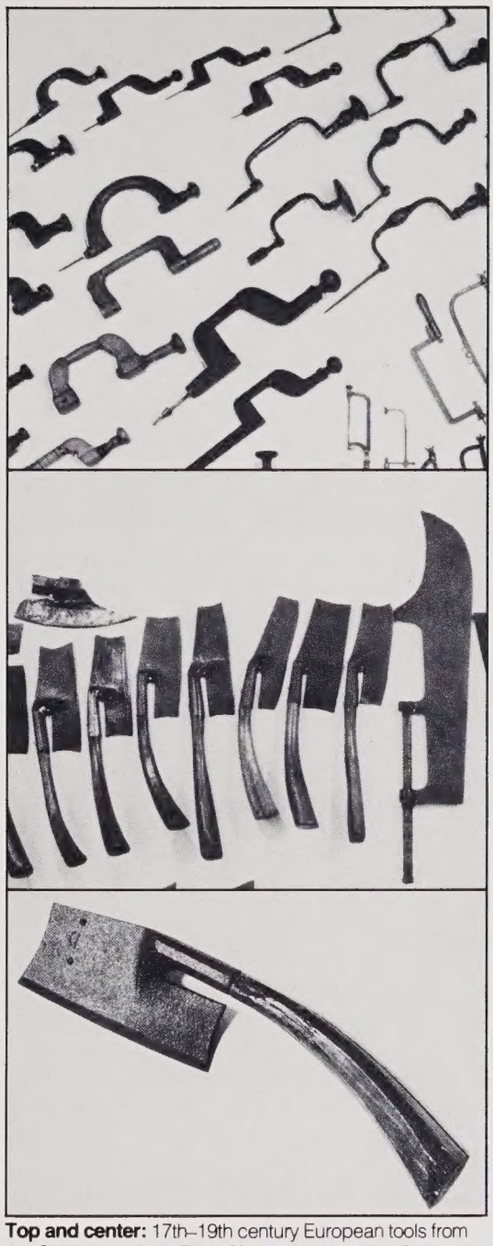
After four to six years as an apprentice (*compagnon* in French and *Geselle* in German), a craftsman graduated and made his masterpiece as a full-fledged worker. He then toured Europe on foot for at least two years, working a few months in each town in a shop belonging to a master-member of the same craft guild as he. The young workman slept and ate at the "guild-mothers" (a sort of boarding house for traveling workmen) or at his employer's home if there was enough space. Work began at five in the morning and ended around eight at night, in winter by candlelight. In each town, in different regions, the young worker learned styles, techniques and specific secrets while perfecting his skills.

Descendants of these guilds still exist and have intensified their activities in recent years, especially among carpenters in Germany and France. *Hamburger Zimmerleute* in Germany still wear the traditional black costume: wide flared pants, short jacket, a wide brimmed hat and a tiny golden ring in the ear, a leather bag swung over the shoulder, containing favorite personal tools. In France, the only specialized tool museum, the *Maison de l'Outil et de la Pensée Ouvrière* in Troyes, is affiliated with and managed by the *Association Ouvrière des Compagnons du Devoir.* An old craftsman in a mountain village still makes clogs with old, inherited tools, but no ap-

prentice is ready to take over his trade. Young workers, fascinated by modern progress and the impersonal efficiency of machines, at first scorned these primitive tools that nobody taught them how to use. But then some, appreciating the difference of a handmade object, started using these old tools again and even made new ones in the old way. In the United States, the back-to-nature trend has brought about a rehabilitation of handmade carpentry and blacksmithing.

Apart from the elaborate carved and decorative tools, the so-called "primitive" tools, handmade by the artisan for his own use, without embellishment or complexity, have their place. The long use and wear of the workman's hand produces a patina that no buffing wheel can equal. Such a plane or brace can be very basic: a piece of wood, flat on the bottom, with a mouth to eject shavings, the cutting iron held in by a wooden wedge. No carving, no proudly burnt-in initials, and yet the feel of it, the way it fits in one's hand, its sturdy sense of proportion, makes of it a piece of sculpture. Each example, taken separately, could be framed or mounted; it would then deserve a spotlight to pick out its relief and patina. That tool passed from one generation to the next, unless it stayed idle, forgotten in a chest or in a cluttered corner of the workshop for long years, until some itinerant peddler, knocking on doors of faraway farmhouses in search of country furniture to resell, picked it up. Invariably, he sold it cheaply, a dollar or two at first. But then when he noticed that people bought these old tools as fast as he could find them, he started looking and paying for them. The prices started creeping up, then jumping up, and farmers and craftsmen sold to the peddler with a shrug and a grin what they had not yet burned in their stove. Someone, usually not connected with manual labor, or perhaps a "Sunday carpenter," bought it, cleaned it and waxed it. Then he put it on a shelf or hung it on his wall to be cherished like a sculpture. Visitors asked questions, mused and pondered over it, grasped it in hand and made the swinging or pushing motion for which it was intended. Or, perhaps they admired it as a work of art. Many amateur craftsmen are tool collectors and vice-versa and like to work with these relics of bygone eras.

In our time of sacrosanct productivity, machine-made plastic or aluminum implements, that are meant to serve but often clutter our lives, are cold and impersonal and thus difficult to respond to with affection. Built-in obsolescence or just careless workmanship and poor quality materials are the reasons why it is difficult to be moved by them, even though there is ample esthetic justification for objects made of these materials. There is an unsatisfied need in us, perhaps nostalgic or viscerally primordial, that makes us yearn for the artifacts of the past. The frenzy of pursuit in the flea markets of the world indisputably proves that antiques are popular and that a great human and social force lies behind this intense drive. Especially sought-after are pieces that were made individually, unstereotyped, and which reveal the marks of sustained human contact—made for a practical purpose and yet beautiful as objects of contemplation. This reaction represents grassroots therapy for the starving senses: man using natural materials, shaped with experience by a caring hand that left its traces, which loved to modify, improve and adapt them to his individual use. (In the French-speaking region of Switzerland the craftsman "serves" rather than "uses" his tools.)



Top and center: 17th–19th century European tools from the Collection of Jan Firch **Above:** *Left-handed Cooper's Axe* from the Bordeaux region of France, 18th century. Photos courtesy O.K. Harris Gallery, New York.

The purpose of this exhibition is not to reconstitute complete workshops or sets of tools for each profession. Historical considerations which document the past ways of living and working are a different aim, enriching and important. Others have done that. For example, there is the exceptional ensemble of tools, furniture and written accounts of the Dominy brothers' shop, displayed at the Henry Francis du Pont Winterthur Museum, to which Charles F. Hummel devoted his excellent, well-documented book, *With Hammer in Hand*. This show is a primer, an introduction for those who have never seen anything like it. It is reinforcement for those enthusiasts who already know and appreciate the special qualities of tools. To me these tools are works of art: the lines, volumes and textures, the nuances within the same category, axes like Bach variations, endless permutations on a simple given theme. Covering a wall with axeheads, all made for the same purpose and yet different from each other in an almost organic way, attains another qualitative dimension, like trees in a forest, a crowd of people and, for that matter, a nation.

Exhibiting such a large quantity of these unique pieces in one place risks making them seem common, even plentiful. However, this collection could not be assembled privately today, no matter how much time and money one might devote to the quest. Try to see them one at a time. Look only at a few that particularly strike your fancy. I am sure that many people are familiar with tools and will be sensitive to the silhouette of a plane, the mass of an anvil, the design of an axe and the balance of its handle. These tools are sculpture. They are art in its most basic form.

An 80-page catalog containing 74 illustrations of tools from this exhibition, as well as a bibliography and list of museums, is available for $7.50 pp. from the Flint Institute of Arts, 1120 E. Kearsley St., Flint, MI 48503. The exhibition, or a portion thereof, is available to travel. For further information, contact Dr. Richard J. Wattenmaker, Director, Flint Institute of Arts, (313) 234-1695.

Notes to *Toolmakers as Artists*

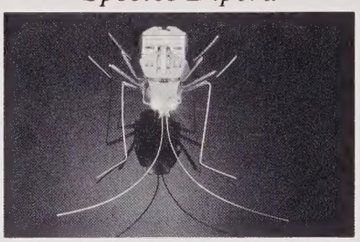
1. *Art and Technics*, New York: Columbia University Press, 1952, 60
2. *Ibid.*, 62-63
3. "Aesthetic Curiosity—The Root of Invention," *The New York Times*, August 24, 1975, Section 2, 1, 23
4. *Op. cit.*, 47
5. Formally designated "Holders of Important Cultural Properties" they are addressed as "Sensei" (teachers) and are obligated to exhibit their work and to instruct apprentices in a national effort to preserve and perpetuate their respective crafts
6. British Museum (Add. MS 18850, fol. 15). The *Building the Tower of Babel* page (fol. 17b) in the same manuscript, illustrates stonemasons and related crafts in similar detail. (See also Andrews, *The Medieval Builder and his Methods*, Plate XII)
7. *Le Théâtre de l'Art de Charpentier* by Mathurin Jousse. Reprint, Paris: Léonce Laget, 1978
8. E.g., *Technics and Civilization*, New York: Harcourt, Brace and Co., 1934; *Art and Technics*, *op. cit.* and *The Myth of the Machine: Technics and Human Development*, New York: Harcourt, Brace & World, Inc., 1967
9. E.g., "Art, Technology, and Science: Notes on their Historical Interaction," *Technology and Culture*, vol. XI, no. 4, October, 1970, 493-549; "Metallurgical Footnotes to the History of Art," *Proceedings of the American Philosophical Society*, vol. 116, no. 2, April, 1972, 97-135
10. A photograph of 1925 by Edward Steichen shows Brancusi posed in his studio resting his axe on the sculpture. See Sidney Geist, *Brancusi: A Study of the Sculpture*, New York: Grossman Publishers, 1968
11. Brancusi made a watercolor self-portrait after this photograph. Both photograph and watercolor are illustrated in Sidney Geist, *Brancusi: The Sculpture and Drawings*, New York: Harry N. Abrams, Inc., 1974, 34, 35
12. See *Voltron*. Texts by Giovanni Carandente, Photographs by Ugo Mulas and David Smith, Philadelphia: Institute of Contemporary Art, University of Pennsylvania, 1964

Leomat Electronic Jewelry

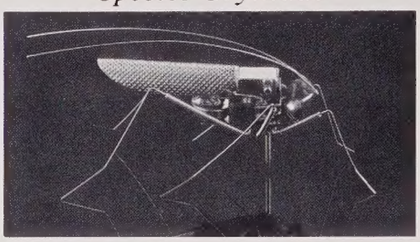
by Whitney Boin
Photos by Jerry Valente

Species Culicidae

Species Dipera



Species Gryllidae



Species Blattidae

Insects: In New York, the majority of the populace spends a large percentage of their waking and sleeping hours conceiving ingenious schemes to assure the complete annihilation of these pests. Yet it was in this very environment that I came across "Leomat," a Dutch partnership which seems to have accelerated the evolutionary process to insure these creatures' continuing existence. What's more, these "super bugs," with stainless steel exoskeletons and red flashing eyes, seem impervious to physical force or chemical sprays.

The bugs closely resemble the species Culicidae (mosquito), Dipera (fly) and Gryllidae (cricket). Stainless steel has replaced the wings, head, thorax and abdomen. Spring steel supersedes the legs and antenna. Sandwiched in between these body parts and echoing actual anatomical configuration are the electronic components, some of which cause LED (light emitting diode) eyes to flash, while others produce cricketlike chirps that increase or decrease depending upon the value of surrounding light.

If the sight of bugs makes you a trifle queasy or this announcement of super-bug hybrids sends chills down your spine, you will be interested to know that these species are designed to be worn as jewelry.

Leo Cahn and Mathys Van Manen are two Dutch craftsmen who comprise Leomat. Their combined studies cover fields as diverse as medical engineering and fine art lithography. They describe their work as new industrial design jewelry and express a desire to exploit pre-existing technology in an unusual artistic way. Leo and Mathys had known each other previously and worked informally on several early electronic projects. In 1973, they initiated a collaborative effort to exploit existing integrated circuit technology to produce useful artistic jewelry. The following year, after much success selling primitive electronic insects, they began concentrating more and more energy toward refining the design and manufacturing processes of these bugs.

Today they design and manufacture many electronic articles apart from this insectus electricus species. Pins, stickpins, earrings and small, physically manipulated mechanisms embrace not only the circuitry but the industrial/technological imagery as well. Exemplary among this group are earrings which utilize tiny oscillating LEDs. Light weight and miniature in size, they combine all essential properties inherent in modern solid state electronics. The wearer animates a sub-miniature LED, perched atop a tenuous coil spring. The pulsating light dots the surrounding region with multiple pinpoints of red.

Previous attempts by other craftsmen to create jewelry integrating these electronic devices have met with little success. The electronic elements remain isolated from the jewelry article both in physical form and character. The alienation of these two entities has resulted in awkward assemblages. Complex heart monitoring circuitry cloistered inside a medieval wrist box, miniature flashing lights held hostage by an overpowering frame and complex electronic gadgets that lack sufficient visual sophistication to sustain one's interest after the initial novelty disappears, are all examples of the typical problems encountered when attempting such a marriage.

While some of these difficulties can be attributed to the lack of sensitivity or ability to design, others stem from the fact that ready-made electronic hardware must be used. The printed circuit or PC board is usually the foundation upon which all solid state circuits are built. Resembling miniature pegboards, it serves as a routing base for components, which are placed through its holes and soldered to thin conductive channels on the opposite side. Although each component is miniature, many components must be assembled to complete each circuit. The resulting boxlike assemblage can prove too unwieldy to incorporate in wearable jewelry.

The integrated circuit chip is the "brains" of modern electronic components. It acts much like a switchboard, directing electricity from the battery to the individual components contained in the circuit. The difficulty lies in the ability to understand both these entities and properly integrate them to harmonize within the overall jewelry article.

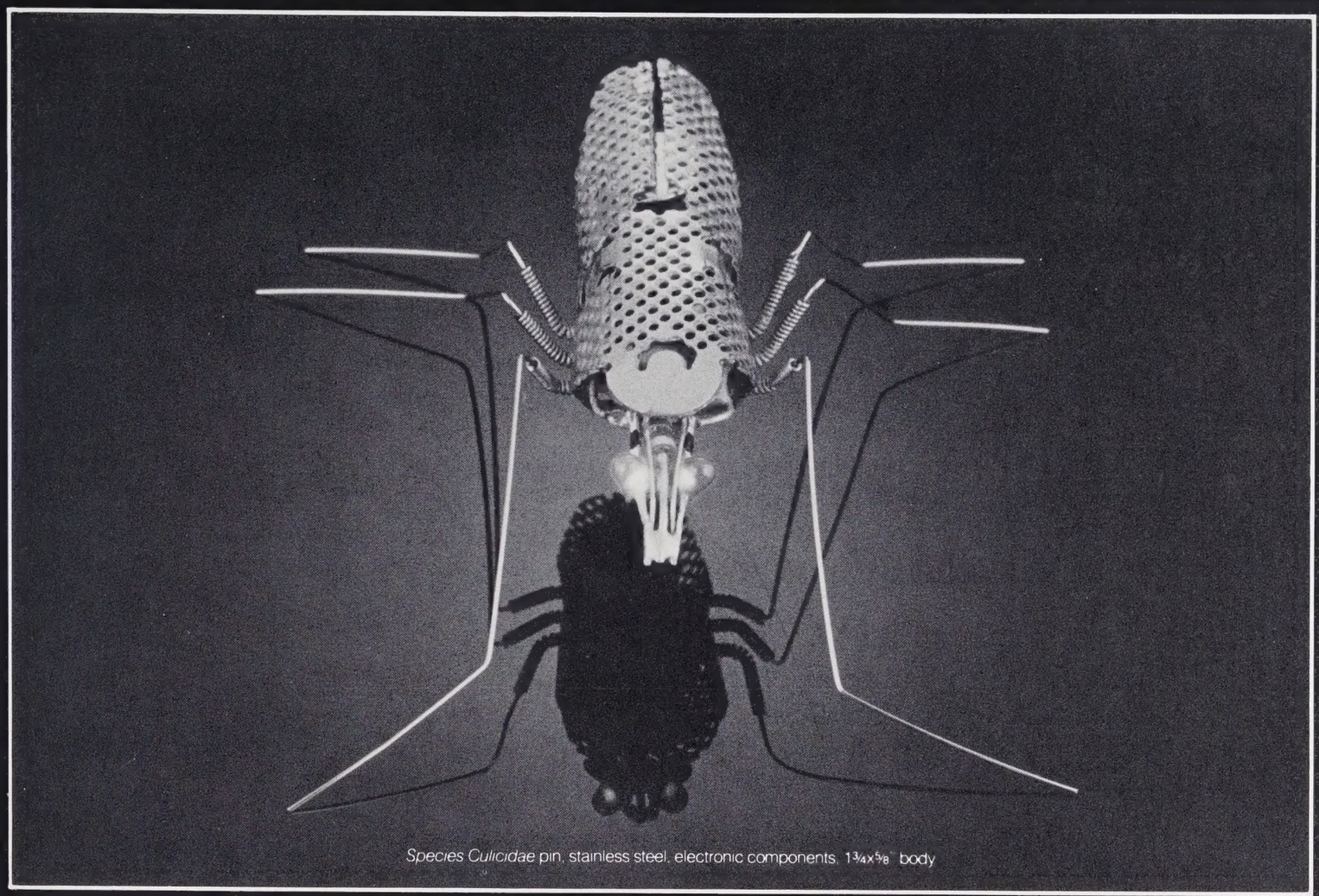
Drawing upon their collective talents, both technological and artistic, Leomat succeeded in this design dilemma by allowing the electrical system to be interdependent upon the jewelry form. The IC chip, already the electronic control center, also serves as the structural foundation for the insect's body, upon which the wings, head and abdomen are soldered. This configuration eliminates the need for a PC board, due to the fact that the electrical routing function has been delegated to the stainless steel exoskeleton.

The electronic components are, in turn, used as important design elements. A capacitor becomes the head; a miniature speaker, the thorax; and LED connectors, the mouth. Batteries, snugly fit under the wings, are placed in cavities created behind the silicone chip, or positioned in tiny compartments that spring open when the appropriate button is actuated.

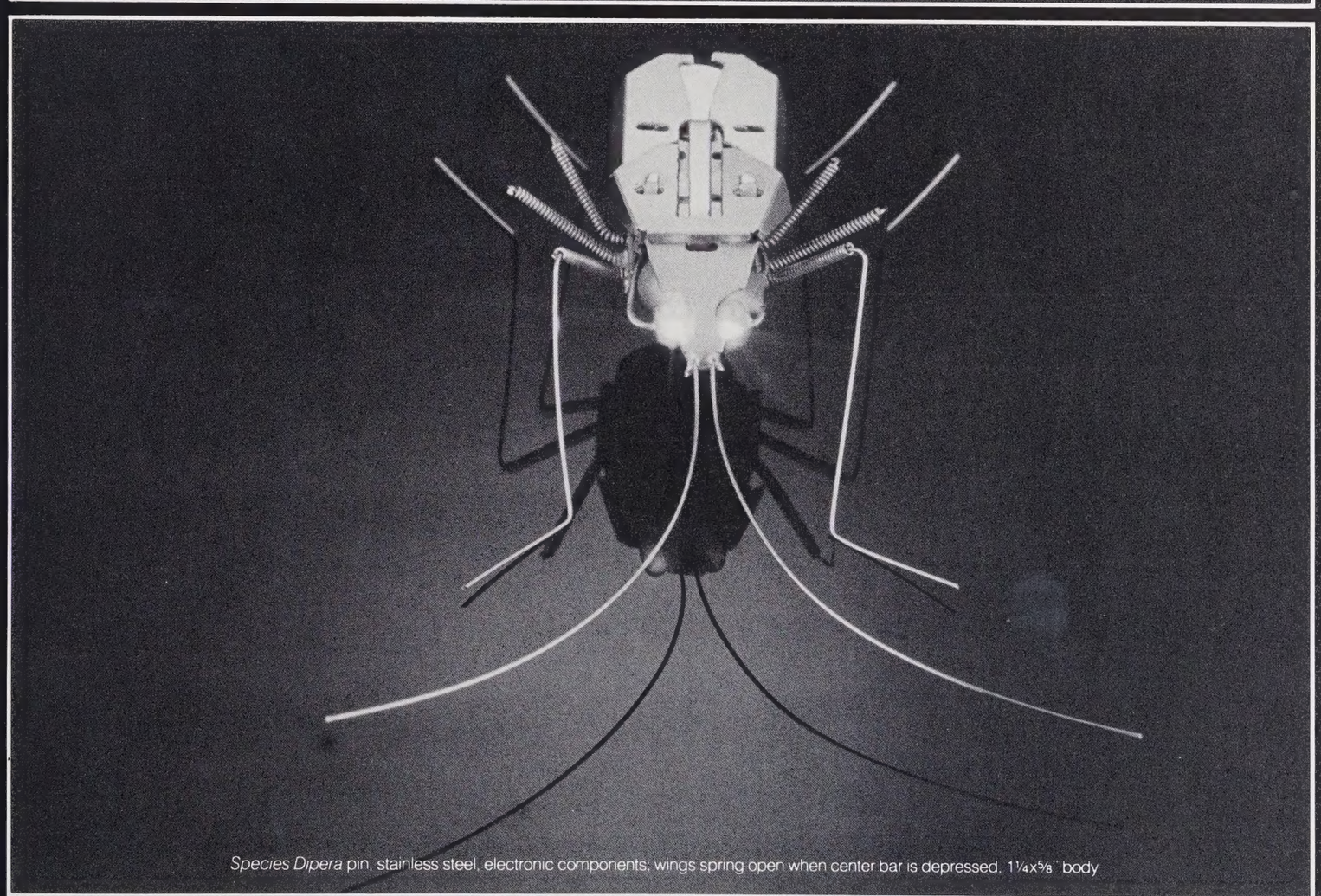
There is very little wasted space or material; most parts serve several functions, reflecting the economy of industrial concerns. Tabs, cut into the steel armor, hold the legs, battery, antenna and head in their proper places. Angles that need not be soldered are underscored and bent. Essentially all parts not available as ready-mades are manufactured using photo-resist and chemical spray etching technologies. The machinery needed to fabricate these pieces was also designed and built by Leomat.

Considering the fact that pre-existing industrial production techniques are used to fabricate all designs, has Leomat ever considered mass production? Well, yes. In fact, several large department stores were interested in purchasing their products. However, Leomat felt a concentration on one or two mass-produced items could undermine their creative energies and deter them from their main artistic objectives. The monetary returns from high volume, cheaper priced goods, did not justify such a sacrifice. They decided to limit production, which increased the price but also allowed extra time to pursue "a vast field of yet unexploited possibilities."

In the metalsmithing arena, which at times is preoccupied with technological development, Leomat introduces no new processes. Their contribution has been the application of existing technology to manufacture electronic jewelry while maintaining a design integrity based upon tectonic images. Perhaps the ability to synthesize new technology and electronic components in unique and innovative ways is due to their orientation within other disciplines. Unencumbered by more formal jewelry training, they could propose fresh solutions previously unconsidered. Possibly the sensitivity needed to integrate material and process emanates from a Dutch tradition that seeks essence through analysis and refinement of idea and content. Whatever the origin, Leomat, through an acute understanding of technology, has combined the industrial commitment to saleable product (which, of course, is "new and improved") with an artist's exploration of iconographic relationships.

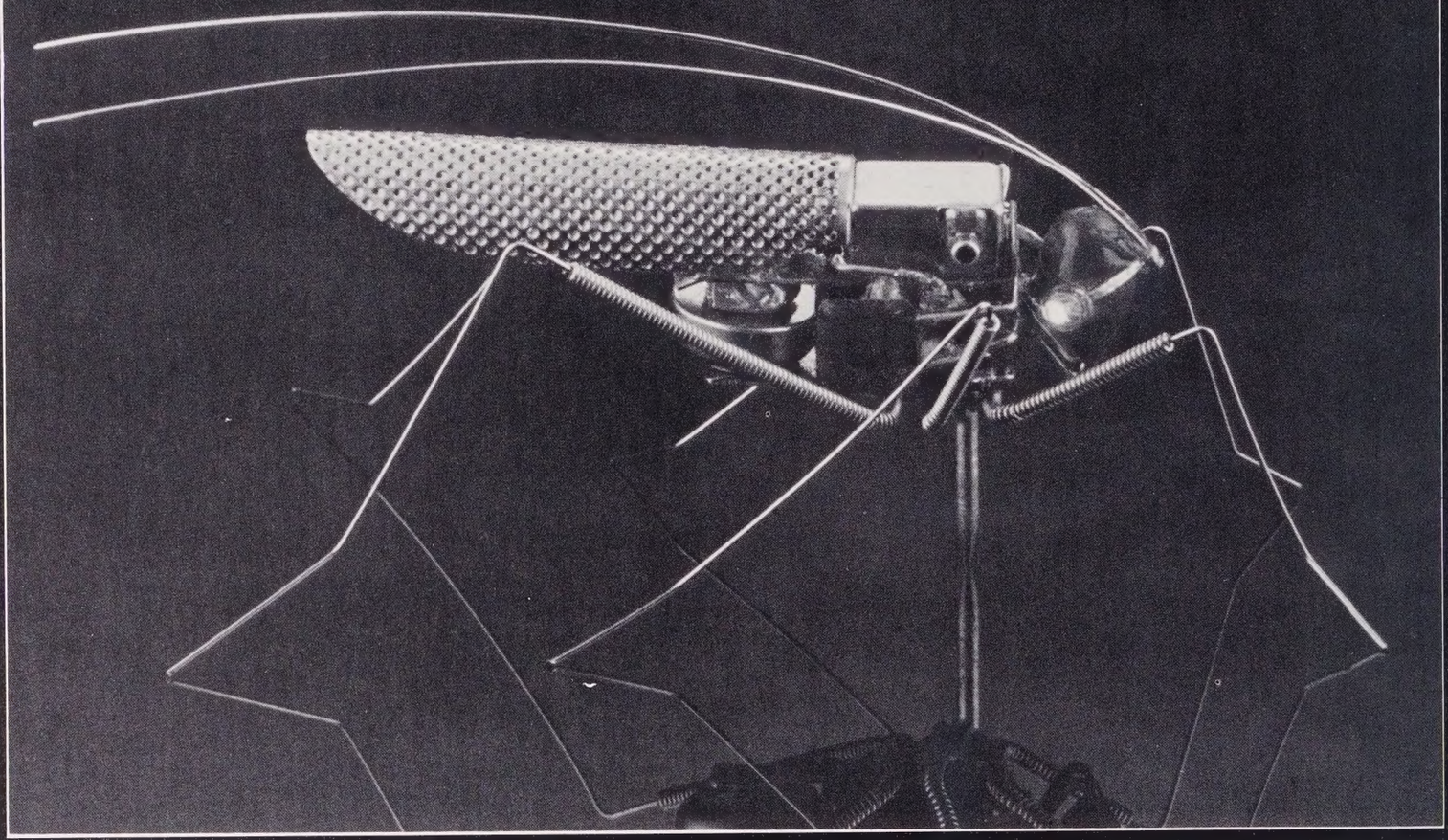


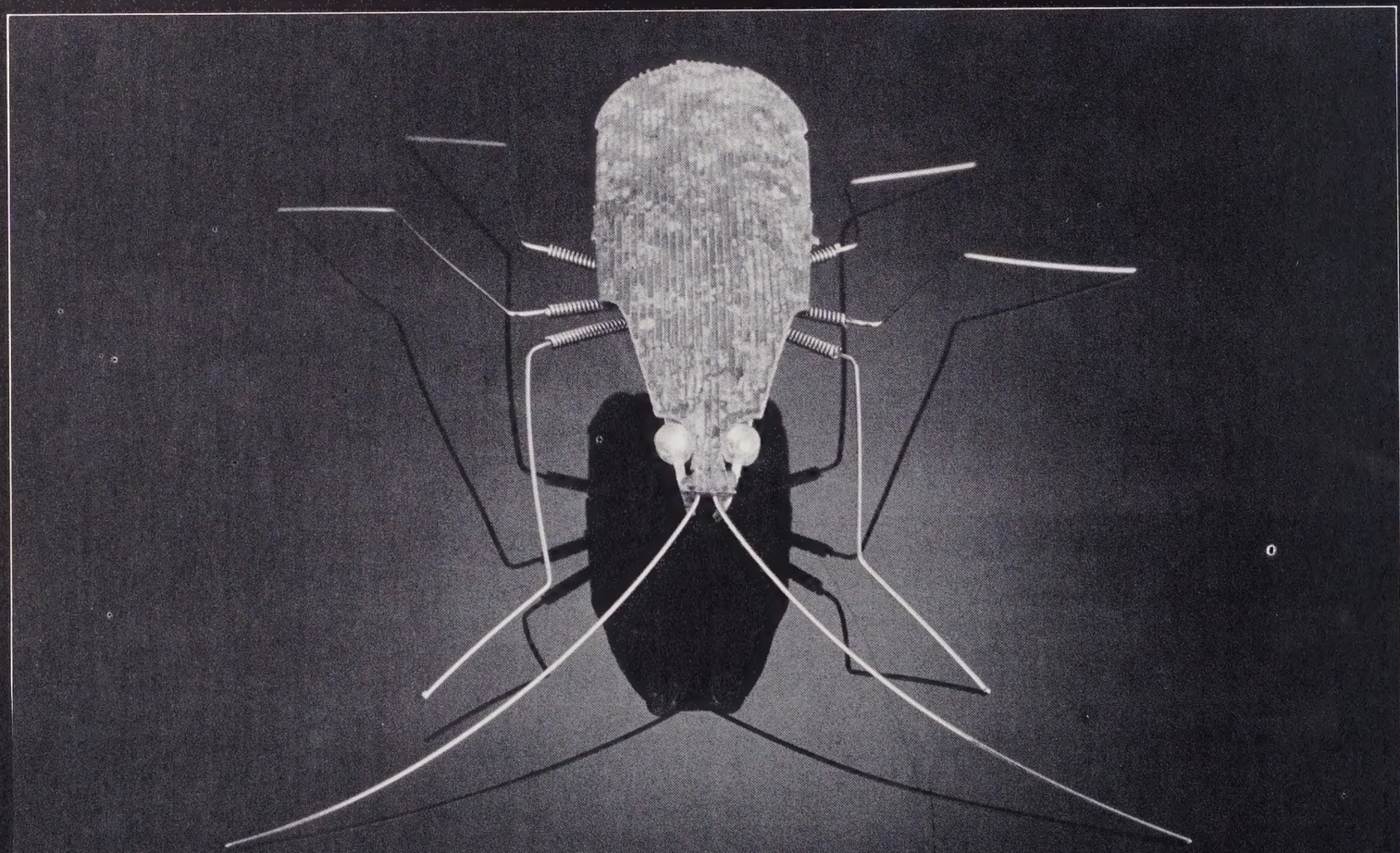
Species Culicidae pin, stainless steel, electronic components, 1¾x⅝" body



Species Dipera pin, stainless steel, electronic components; wings spring open when center bar is depressed, 1¼x⅝" body

Species Gryllidae pin, stainless steel, electronic components; small speaker (box behind head) emits chirping noise, which increases or decreases as varying light hits the photo-resistor (dark, square unit between speaker and legs); when antenna touches main body chirps stop and red eyes flash, 2x5⅛" body





Species Blattidae pin, stainless steel, electronic components; body etched, brown coloration, 1⅜x½" body

Optical Qualities of Carved Gemstones

Basic Tools and Techniques

by Henry Hunt

This article is the second of a three-part series

Although we live in a culture dominated by technology, it is doubtful that this is what causes the contemporary craftsman's preoccupation with material and process. A powerful element in the tradition of all the arts is the impulse to "make it new." When pleasure fades into nostaglia or habit, the life seems to go out of things. Sometimes a craft can languish for a long time in a kind of rigor mortis until suddenly something stirs it up. The introduction of foreign techniques or the development of new ones, the discovery of new forms or new areas of application can all act as the necessary catalyst. The 20th century has witnessed so much of this that change itself has become part of the content. We expect it and look for it, rejecting what is not "new."

Lapidary took the big step, but in the wrong direction. Advanced technology in the form of electronic equipment was introduced but nothing new happened. One example was the use of sonic die cutting machines which made possible the mass production of flower forms, leaf forms and chess sets. These were wonderfully done but boring. Another example was the use of computer-controlled faceting machines. This merely resulted in the mass production of the standard faceted stone.

Both of these methods were aimed at increasing production. They removed lapidary from craft status and turned it into an industrial process. Both failed to renew and refurbish what it is that makes the gemstone fascinating. They merely increased the production of what was already overdone.

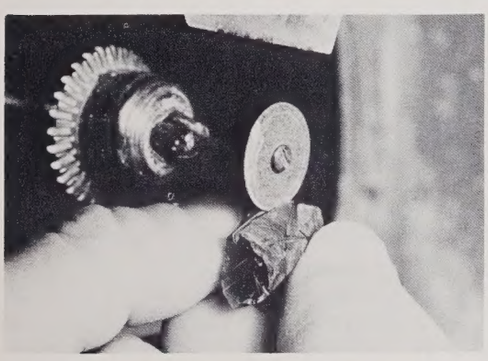
The Tradition of Lapidary

The tradition of lapidary is concerned with our fascination with the mineral crystal. The techniques which will renew and intensify this fascination are those that increase our ability to explore the qualities of these crystals. The significant technical changes that have taken place are primarily in two areas: the development of diamond abrasives and our knowledge of the optical properties of crystals. These changes have allowed both the introduction of new forms and the perfection of older ones. Even faceting, which remains concerned with the classic geometrical form, has increased the complexity and perfection of this form tremendously over the past 30 years.

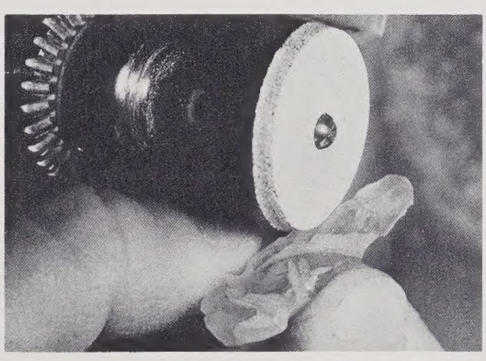
The process of carving, once a tedious and time-consuming procedure incompatible with our current culture, is now able to explore and develop new forms quite rapidly. The desired qualities of the gemstone can be pursued in many different directions. The impetus for these changes did not come from the craft itself but from the industrial sector, particularly the ceramic, electronic and special metals industries. They were inspired by processes developed to solve special problems in high-speed cutting or finishing or some other area, not at all related to lapidary. Yet when translated to the lapidary's use they revitalized the entire field.

Designing the Light Qualities of Gemstones

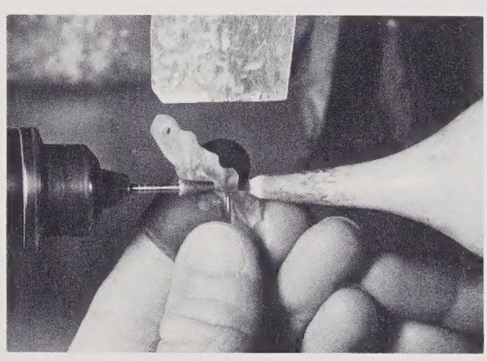
Suppose you want to carve a small piece of light smoky quartz so that it can be inset into a metal design to provide an image of a limpid pool of water. The light coming out of this stone must be deep and pure, with perhaps a slight rippling effect and a sparkle with minute color highlights. To achieve this, you will want to make the top a smooth, low curve, like the underside of a cabochon, while the back will be grooved in a shallow pattern with low, rounded ridges between the grooves. This will provide two types of reflections, one off the back of the grooves, the other off the undersides of the narrow ridges. The first gives the effect of



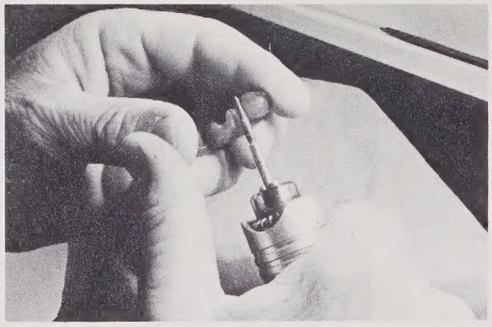
A silicon carbide separating disc slotting grooves in a small stone. These discs cut almost as well as diamond saws, even on topaz.



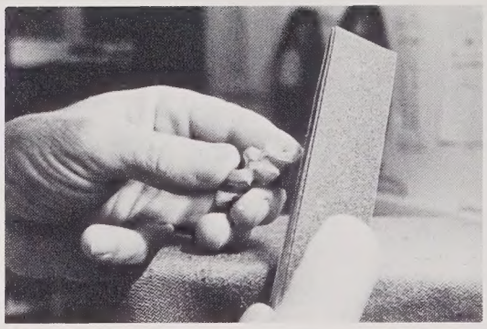
A homemade silicon carbide grinding wheel, similar to a Mizzy wheel. These 1 inch wheels grind out all the slots put in by the small saws, opening out the grooves and removing all the unwanted bulk.



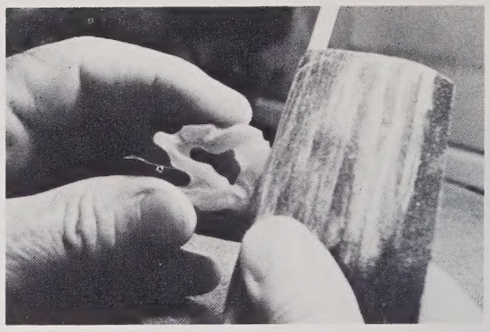
A diamond carving point does the detailing. The form is fully developed with these points and the surface is brought to a uniform texture.



A hardwood point smoothing the stone surface using diamond compound. Very little compound is used. A different wood point is needed for each grit of abrasive, starting with 220 and finally polishing with 14,000 grit.



Silicon carbide sandpaper on a jeweler's sanding board is very useful with the quartzes and softer stones. Only exposed areas can be sanded, so the wood points are still needed for difficult to reach areas.



Quartz is suitable for large pendant carvings. Some of these can be entirely sanded with the silicon carbide sandpaper and then taken directly to a small felt polishing wheel using cerium oxide.

undulating light: the second sends out occasional flashes when the light hits just right. In order to gain maximum clarity and brilliance, a perfectly smooth finish is required on both front and back. In spite of the simplicity of the shape of this piece, the image of limpidity would be impossible without a brilliant polish. So the knowledge of how the stone handles light requires also the tools capable of achieving it.

Early in this century G.T. Beilby developed a theory of what happens when a stone polishes. The theory holds that under the intense pressure and heat produced by abrasive action a minute layer of stone is melted and flows. This happens in both coarse grinding and final polishing. During the coarse stage, the size of the abrasive grain is so large and the scratch so wide that the flow merely rounds off the ridge, while during the superfine stages, the flow actually fills the scratch marks and leaves a smooth, extra hard surface. The entire problem of smoothing and polishing a crystal is concerned with achieving that point at which this even flow will take place.

The Stages of Carving

In their eagerness to carve form few people realize that the most difficult part of lapidary carving is the smoothing. If not done properly, a desirable or even adequate finish is impossible. With opaque stones, texturing can be used and the problem of polishing sidestepped. But with transparent gemstones, the very qualities which make the crystal attractive in the first place are sacrificed unless the surface is made transparent.

Carving can be divided into three general stages: sawing, grinding and smoothing. Polishing is what happens at the end of smoothing. Only a few basic tools are needed and these can be listed for each stage as follows: 1) a 1 inch separating disc or saw; 2) a 1 inch Mizzy wheel, plus a few diamond points of appropriate shapes; and 3) wood or plastic smoothing points with diamond compound.

Sawing. Since transparent gemstone material usually comes in small pieces, most of the heavy equipment associated with lapidary can be avoided. A small piece of peridot, amethyst, topaz or garnet can be worked directly with small 1 inch saws. Until the invention of the diamond saw, stone was sawed with abrasive mud, the carrier being a metal blade or wire that was dragged across the stone. An ample supply of grit had to be applied to this blade. One had to be patient. Now the diamond saw allows huge pieces of stone to be cut down to manageable size very quickly.

Sawing is used to block out shape, to sink bowl-like depressions, to cut out piercings, to slot grooves and to cut away unwanted parts. It is strictly a preliminary stage, but it more or less sets the general form of the carving.

There are small diamond saws available to the carver, but the silicon carbide separating disc commonly used by the jeweler is equally effective and its low cost makes it preferable. There are cases, though, where the delicacy of the material, an unusual cut, or the need for speed will make the diamond blade desirable.

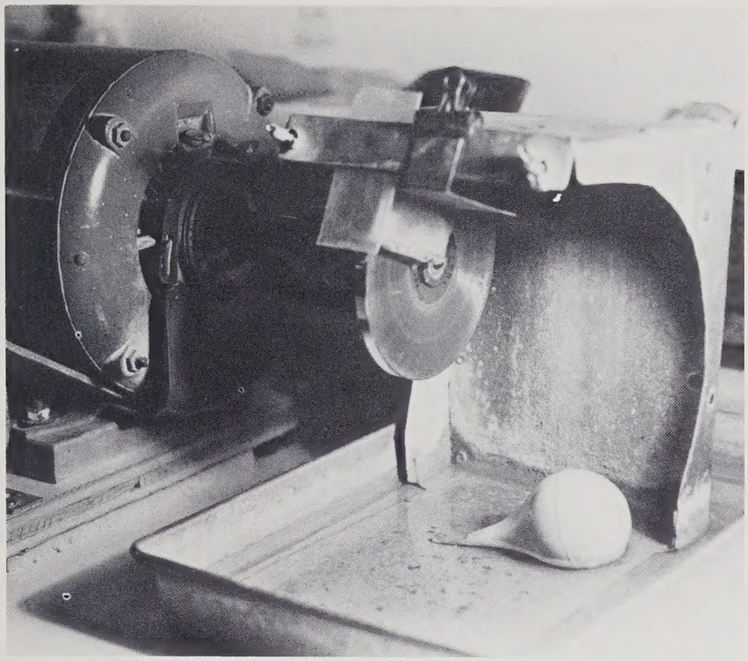
Since everything must be kept wet during sawing, both to dissipate heat and control dust, it is best to use a rigid set up rather than a flex-shaft to hold the saws. This leaves the hands free, both to hold the piece steady and to squirt water on the cut with a small squirt bottle. A standard 3450 rpm ¼hp motor is adequate. A work arbor is attached to the shaft and a Jacobs chuck screwed onto that. A Jacobs chuck is best since it has less tendency to vibrate open.

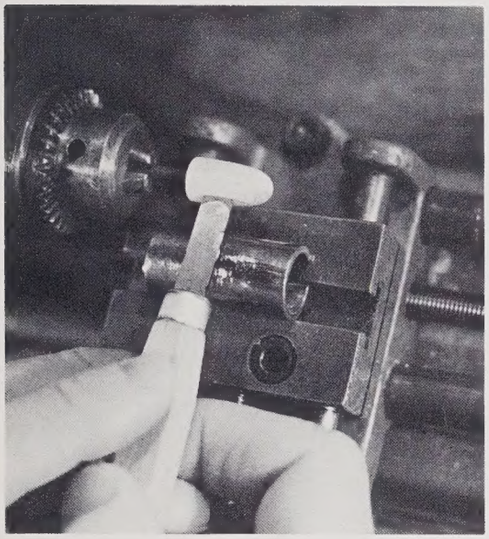
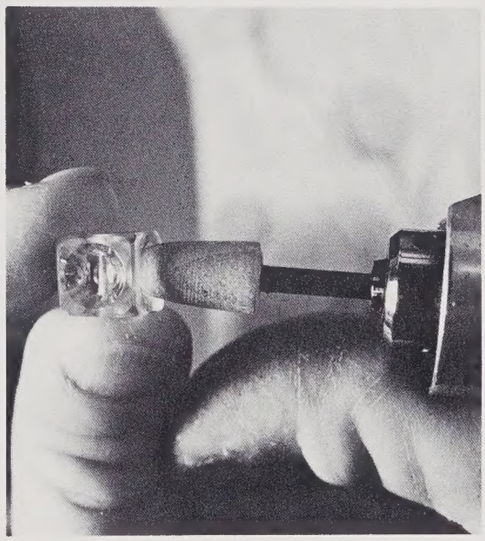
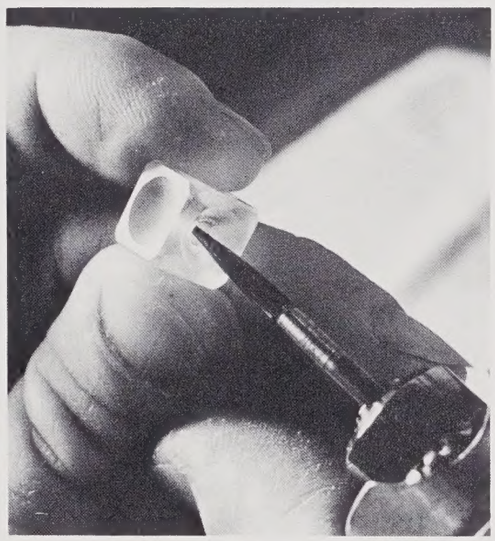
Grinding. Grinding metal is a different ball game than grinding stone. Both large and small silicon carbide grinding wheels used by metalsmiths are much too hard to work on stone. This may sound odd since stone is so much harder than metal. The hardness of a wheel is determined by how tight the abrasive grain is held by the binder. The hardness of gemstones quickly wears down the abrasive grains and a hard wheel will stop cutting. A soft bind is needed so that the wheel will wear, exposing new grains at the cutting edge. Thus, silicon carbide grinding wheels used in lapidary have a relatively soft bind and wear fast.

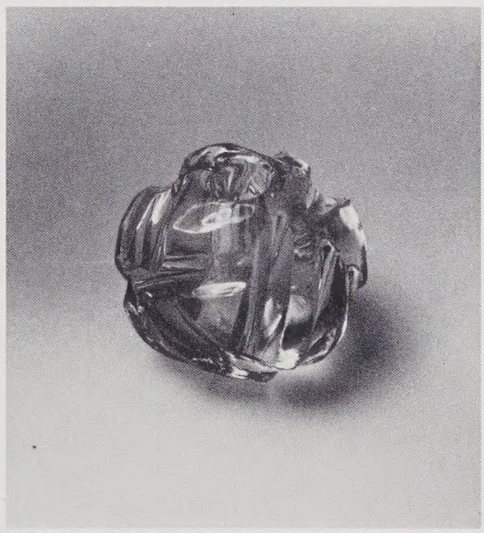
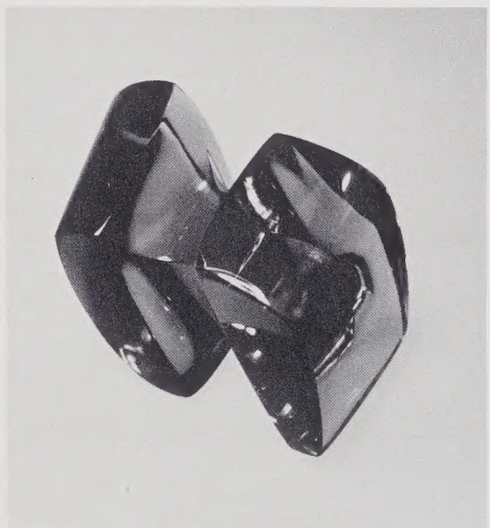
The most readily available grinding wheel is the Mizzy Heatless Wheel. It is also one of the best. Mounted silicon carbide wheels for lapidary use are made and are sometimes carried by lapidary supply dealers. You can also make them yourself at home using a small pottery kiln. If you plan on doing extensive carving, it may well be to your advantage to do so. They are not complicated to make but do require a step-by-step sequence. This procedure is completely covered in my book on carving (listed at the end of this article). Otherwise the Mizzy wheel is the best bet. The Craytex rubber wheels, even those containing silicon carbide grit, are not satisfactory. The effect of the rubber is to start a heavy premature flow of the stone which results in a blotched and irregular surface. The 1 inch grinding wheel will open out all the slots put in by the saws. It completes the contouring and generally establishes the form. However, no detail is possible.

Prior to the invention of the diamond point, an iron rod with a shaped point was used for final grinding and detailing. These points were used at low speed with an abrasive. Very intricate cameo and relief work was done, much of it more intricate than any work being done today. Yet the time consumption was immense. The diamond point does not do anything better than the old-fashioned iron points, but it does do it much faster.

It is possible to make your own points, but the technology and skill required to produce ones that are in any way equivalent to the manufactured ones makes it much cheaper to buy them. I have always considered the $^3/_{16}$ inch and the ⅛ inch points with a tapered cone shape to be the most useful. When you get into undercutting and channeling and dead ends, all sorts of shapes become useful. Yet the $^3/_{16}$ inch remains the one I use most often. In general, the type and complexity of the forms you carve will be influenced by the shape of the diamond points you select.



Top: *Left:* A 4 inch diamond coated faceting disc operated vertically on a slow speed motor (1140 rpm). A sponge is held in place against it to keep everything wet. For the smoothing stages phenolic discs are used in the same manner. Even flattish surfaces on topaz can be successfully brought to a polish with this setup. *Right:* Hard and softwood smoothing points made of phenolic, hydulignum (a plastic wood combination), ironwood, oak and soft pine. There are other possibilities like lignum vitae, ebony and birch. Commercially available points are made in phenolic, hydulignum and soft pine. **Center:** *Left:* A softwood point being turned on a lathe. A short piece of ⅛ inch welding rod is epoxied into the wood cone to act as a mandrel. Fancy shapes can be turned to suit any forms. *Center:* A large softwood point polishing a quartz cube. On the softer stones the softwood points have less tendency to leave ripple or chatter marks; on the hard stones, they are too soft and fail to work properly. *Right:* A hardwood point smoothing out a drilled hole. With transparent stones all holes must be polished. This means using long, thin points with diamond compound through the entire grit sequence. Because of its thinness and strength, phenolic or plasticized wood is best. **Above:** *Left:* Drilling a stone with the small 1¼mm diamond drill. An ear syringe is used to squirt water on the drill. Once the hole is started it develops its own reservoir. Drilling can be done at any stage during the carving. *Center:* This ¾ inch pink quartz bead was carved using diamond points and hardwood smoothing points. The entire sequence of diamond compound grits was followed, and the hole through the center was completely polished so that it cannot be seen. The bead is every bit as brilliant as a faceted stone. *Right:* This 1¼ inch carving was shaped and smoothed on the vertical laps, with the exception of the neck portion which was shaped with the small grinding wheels and sanded smooth with sandpaper. All parts were then polished on a 2 inch hard felt buff with cerium oxide.

Drilling is a special application of the diamond point. In carving, it can be done freehand with the rigid motor setup. Start with a 1¼mm drill. These will drill very fast if you keep them wet and use a reciprocating action that allows the tip. to be constantly flushed. After the hole is drilled through, it can be reamed larger with any available point that will fit. A small diamond ball-point can also be used and will drill a hole very rapidly. Just keep them wet. Manufacturers usually recommend 5000 rpm, but I have found that at 3450 rpm the points wear less fast and the work progresses just as quickly.

Smoothing. This stage is virtually neglected by all books on lapidary carving, yet it is crucial when working with transparent crystals if the full brilliance and intensity of the light qualities are to be realized. The surface must be brought to a perfect smoothness if a perfect polish is to be achieved.

Smoothing is the only stage that might be considered tedious, yet with the right tools it can actually be done quickly. Since the object is to reduce the scratch pattern from coarse to superfine, an appropriate sequence of diamond grits is used. The tools that carry these abrasives need to be approximately the same shape as the carving points that shaped the surface in the first place. Since they will be used in the flexible handpiece at high speed, they need to be made of a resilient material that will absorb shock. They must also be capable of retaining the diamond grit embedded in the surface and at the same time hard enough to press it firmly against the stone so cutting action can take place.

For a long time hardwoods such as oak were used as laps for the finer diamond grits. With the coarser grits, the wood gets chewed up quickly. Oak was also too soft for the very hard stones. It failed to cut fast enough. Other substances have been developed. One, a plastic called phenolic, is used widely as a faceting lap for the softer stones, particularly quartz. Mounted carving points in this material are available in various shapes. If you wish, with a small jeweler's lathe, you can shape your own points out of hard materials such as lignum vitae, ironwood or phenolic.

The diamond grit in compound form is easily obtained ready-mixed in plastic syringes in grades ranging from 100 grit to 100,000 grit. Since the surface of the stone being worked with the diamond point is often coarse and irregular, the first operation in smoothing is to even out all surfaces to a consistent scratch pattern. The 220 grit is probably the best to start with. The 600 and 1200 grits will continue to remove small amounts of material and to even out the surface. The 3000 and 8000 grits can be considered prepolishing stages. Their effect is both a cutting and polishing action. The fine flow that makes up the polish takes place with the 14,000 grit. Each of these grits requires its own wood point. Even if you try to shorten the sequence by eliminating the 1200 and 8000 grits, you will still need four points for each shape used.

With quartz, opal and moonstone, the use of silicon carbide sandpaper on sanding boards or rods is possible wherever the surface is sufficiently exposed so you can reach it. Four grades of sandpaper are used: 180, 260, 400 and 600. After the surface has been smoothed with the 600 grit paper, it is possible to go directly to a small, hard felt wheel with cerium oxide for polishing. The felt wheel should be used on the slower 1725 rpm motor. When the quartz carving is complicated and contains both large exposed areas and tight, difficult-to-reach areas, a combination of both the wood points with diamond compound and sandpaper can be used. For simplicity you may decide to work the entire piece with the wood points and diamond compound.

Future Development in the Craft

The three stages of carving which have been described are relatively simple and will satisfactorily complete a large range of designs. For more involved designs, there are other tools available to the carver which are listed in the catalogs of all the major lapidary and jewelry supply companies. Most of these tools will fall in the sawing, grinding and diamond point area. At present the range of available wood or plastic smoothing points is rather limited, so you may want to shape your own.

Being a tool freak is certainly desirable, and the young craftsman's impulse to make tools should be encouraged. Yet the action of a tool is its technique, the two cannot be separated. Thus, it is imperative that basic techniques be developed. These should be simple and central to the craft. Once having achieved this, the introduction of more complicated tools and methods will stand less chance of overwhelming you. Having thoroughly mastered the hammer, the hydraulic press is no big deal.

There is considerable room for expansion in lapidary. In spite of its long history, the craft is not highly developed. The remarkable surge of interest in gemology during the past decade has been a decisive factor in developing the incentive to search out new ways to exploit the optical properties of the gem. The faceting machine is very limited and concerns itself with only a few of these properties. Yet the inventive craftsman who wishes to tackle the other properties is confronted with a frustrating confusion between theory and practice.

The major pitfalls generally develop as a result of the structural differences between species of gemstones. A peridot, for example, will act quite differently during the smoothing stage than a piece of topaz. Likewise, garnet, which is quite brittle, will cause trouble during the grinding stage if care is not exercised. In my book on carving I devote an entire chapter to each of the major gemstones in an effort to touch as many of these problems as possible. The basic carving process is easily learned. It is in the wide variation of the characteristics of the gemstones themselves that the problems will surface.

In the next article I will discuss some of these characteristics as well as the kinds of forms to which some crystals are particularly well suited. This will also include the unusual optical properties possessed by a particular stone like tourmaline and ways in which these qualities can be effectively developed.

Henry Hunt has been a self-employed lapidary for the past 20 years. The photographs in this article are reprinted from his recently published book *Lapidary Carving For Creative Jewelry,* which can be obtained from The Desert Press, Box K, Bouse, Arizona, 85325 for $12.95 pp.

Correction

Due to a mix-up during copy preparation several errors were introduced into the first article of this series. On page 38, line 4, the term should have read: "laser producing crystals." The first three sentences in the second paragraph should have read: "Yet mingled with this symbol of value, there is also one of joy, a delight at the intense orange-red of a topaz or the blue of an aquamarine. So the gemstone is also a symbol of our color pleasure. And this is directly associated with our capacity to perceive the transformation that light undergoes between entering and leaving a gemstone."

The opening sentence of the last paragraph on page 38 should have read: "There seem to be two significant ways of developing form in nature and a very sharp picture of this was drawn by the Austrian physicist, Erwin Schrodinger. He wrote: "

In the second paragraph, third sentence of page 39, the phrase should have read "light qualities," and on page 40, the third sentence should have read "the possibilities of light."

Nova Scotia Metalsmiths

by Christopher Tyler Photos by Anthony Mouserratt

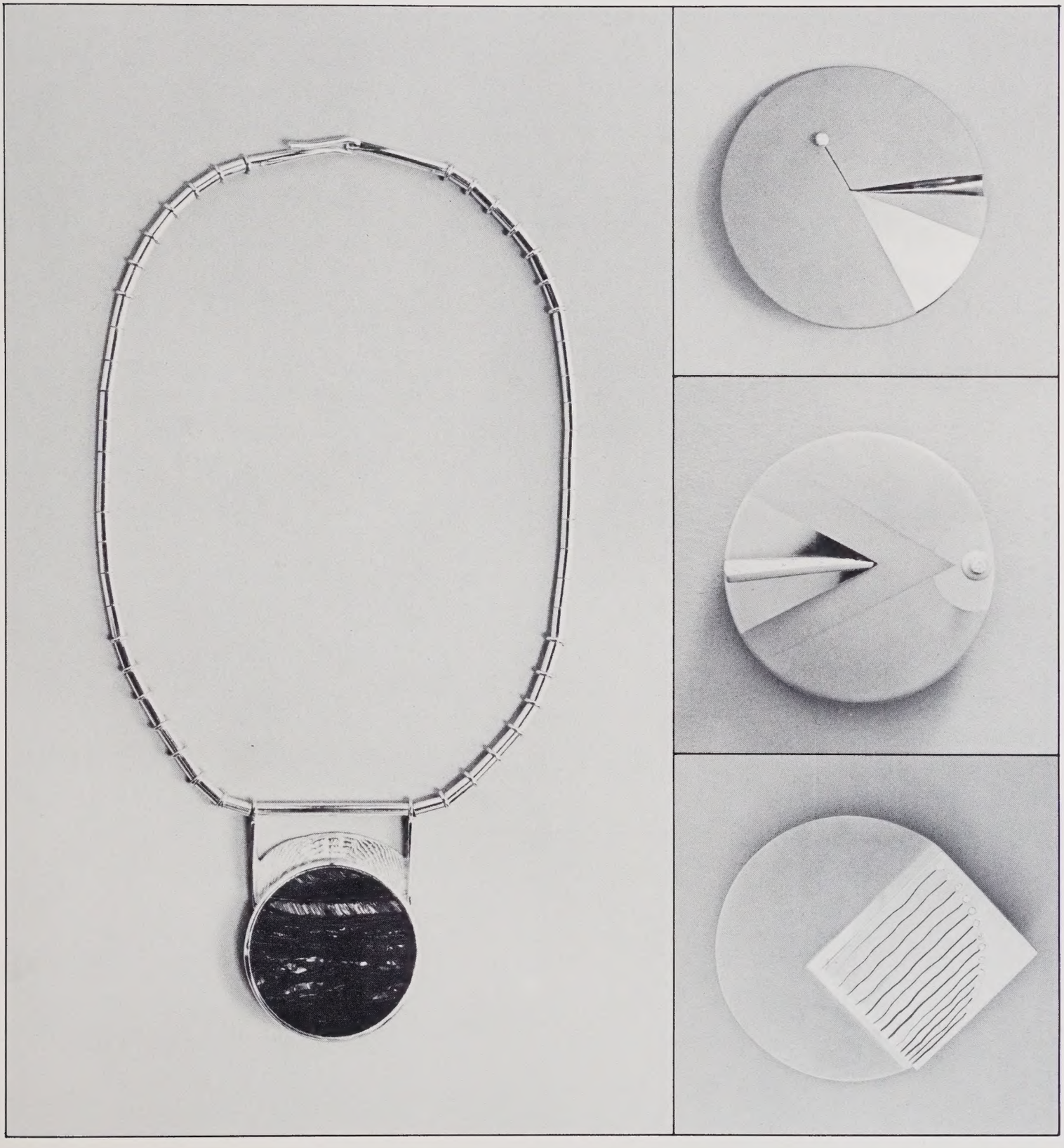
Halifax, capital of the Province of Nova Scotia, was founded on stone and defended by gun-metal. Rocky outcrops still pervade the landscape. The city plan shows the origins of a fortified harbor town, its boundaries determined by the range of artillery.

Originally an outpost of European colonial policy in the New World, Halifax still offers a point of convergence for North American and European cultures, and its concern with stones and metal are now principally those of jewelers and metalsmiths. *(continued)*

Left: Carol Cassidy's neckpiece, which was awarded the Best in Metal, is a simple, elegant piece built with silver and gold around a tigereye. The structure of the chain allows the piece to maintain the integrity of the neck shape even when not worn, while still being flexible—an interesting feature in a piece designed both for wear and for exhibition. Carol teaches part time at NSCAD. *Right:* Christian Gaudernack is the third generation of a major Norwegian goldsmithing family. Each generation has, however, founded its own separate business. Christian himself apprenticed with the David Anderson firm—the same firm where his grandfather worked as a designer 60 years before. His guild exams required him to design a piece requiring several major technical skills and execute it in gold to tolerances of 1/10 millimeter. Later Christian studied with Claus Ulrich in Pforzheim.

The geometric subtlety and strength of this work is immediately evident. When worn, the uncompromising forms are mitigated by the body; in one case *(center right)*, the diamond unscrews to give the wearer a choice; in another, the diamonds are angled and mirrored to allow the wearer to enjoy them. The "space age" niobium is cunningly and unobtrusively used as an accent only.

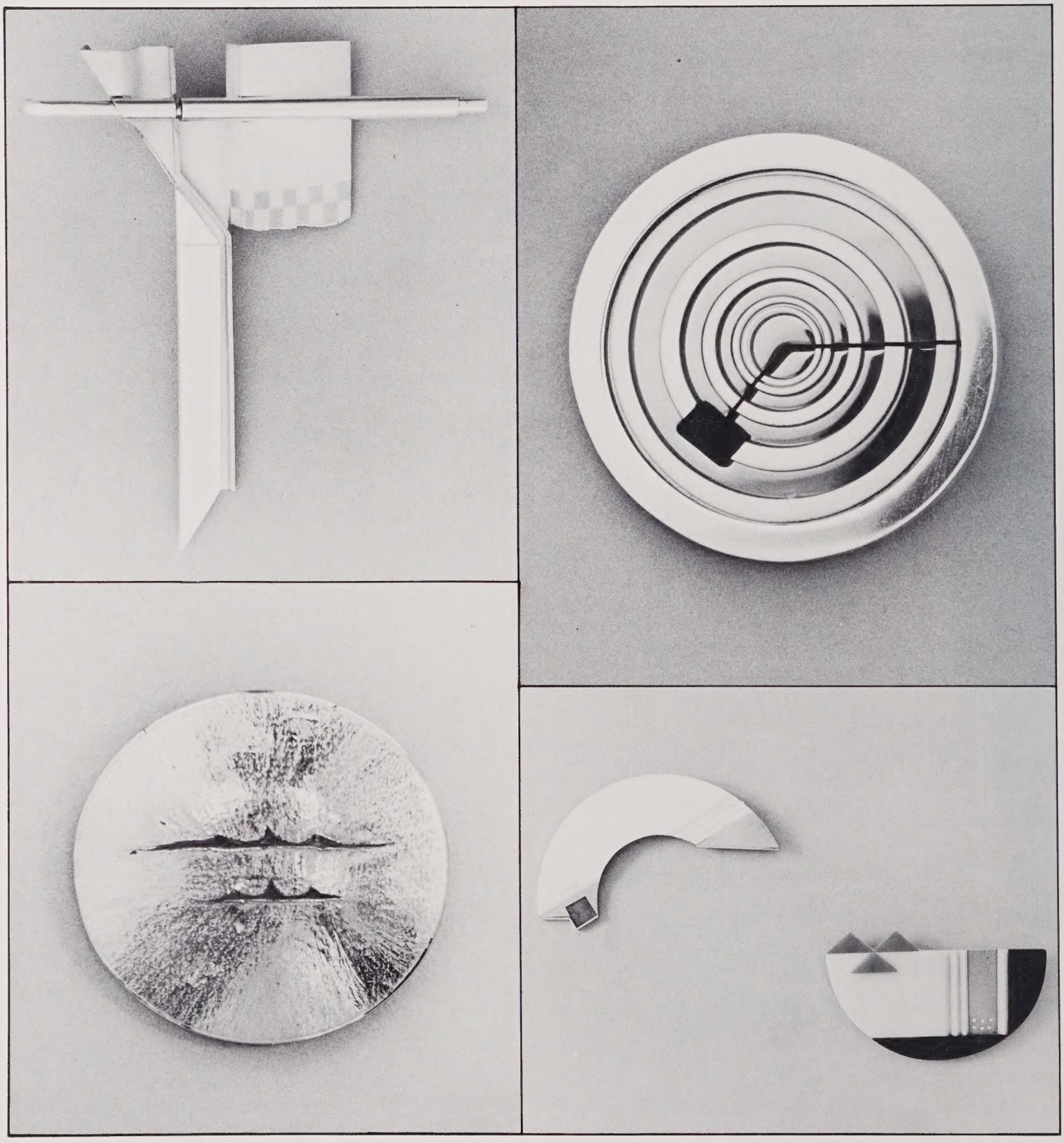
The brooches shown here use stainless steel, silver, niobium and diamonds. The top piece was awarded the Mary Black Award for Design Excellence.



Top left: Recently the technician at NSCAD, Adele Hollingsworth likes a contrast between the angularity of her pieces and the curvature of the human body. The pieces nevertheless wear well, and the forms relate to Adele's mainly urban background. This piece is highly sculptural in its establishment of intersecting planes and lines. *Top right:* Besides his skill in metalwork, Peter Swim is also a competent leather worker, who has a piece represented in the Massey Collection. His metal has a modern look and involves simple elements and visually ingenious combinations of materials. The brooch shown here is made from silver, plexiglass and stainless steel. *Bottom left:* Charles Lewton-Brain has traveled extensively, having resided in the U.S.A., and the U.K., studied in Pforzheim and in Canada and visited the Far East and South Africa. His work exhibits a looseness and a contentment with the marks of process. The essential marks evolved at the end of the series of chased faces. The pin shown here incorporates both polished and fire-gilded silver. *Bottom right:* Leslie Keeble's bold use of nonprecious materials is relatively unusual here. These two brooches include plexiglass, silver, diamonds, ebony, gold and lapis lazuli. The strong use of a geometric basis does not inhibit a playful exploration.

The presence of an energetic art college—Nova Scotia College of Art & Design—with influences from both North American and European attitudes to metal, has affected the development of metalsmithing in the province as a whole. The styles tend to be divided between organic and flamboyant on one hand, and geometric and more reserved on the other. The emphasis has always been on good design for handmade pieces, rather than on the broad practice of highly equipped ultra-modern techniques. Silver fabrication is predominant.

First Orland Larson, a Canadian (now Head of Jewelry at Alberta College of Art & Design), and then Christian Gaudernack, from Norway, brought their expertise to the NSCAD jewelry department. The succession of influences, including visiting faculty from North America



and Europe, has left its mark on the department. Most, but not all, of the craftsmen referred to here were students of both masters. All have benefitted; all are now achieving their own personal statements in their work.

The occasion of a major juried craft exhibition, "Profile '81," organized by Nova Scotia Designer Craftsmen, representing the province and touring Canada, encouraged the work of major metalsmiths in the province and provided a readymade point for assessment. Following is a selection of metalsmiths and pieces from the exhibition. The metalwork juror was Lois Betteridge of Montreal.

Christopher Tyler is Administrative Coordinator of Nova Scotia Designer Craftsmen

Top: One of Orland Larson's early students, David MacDonald retains a characteristic flamboyance which has become his own. These pieces show an exuberance, an overt concern with expressiveness and technical panache. The juxtaposition of laminated silver and gold with mother-of-pearl demonstrates a delicate sensitivity, particularly in the pendants shown here, *Moon Images (top left)* and *Honey Comb (top right). Bottom:* Pamela Ritchie's concerns reconcile an interest in traditional filigree techniques with a personal, feminist statement. The three pieces shown here deal with various states in a woman's life.

Masterpiece in Metal

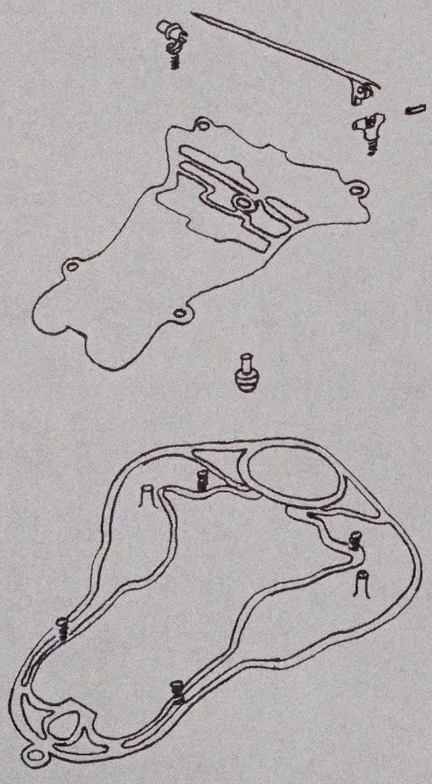
René Lalique Seahorse Brooch

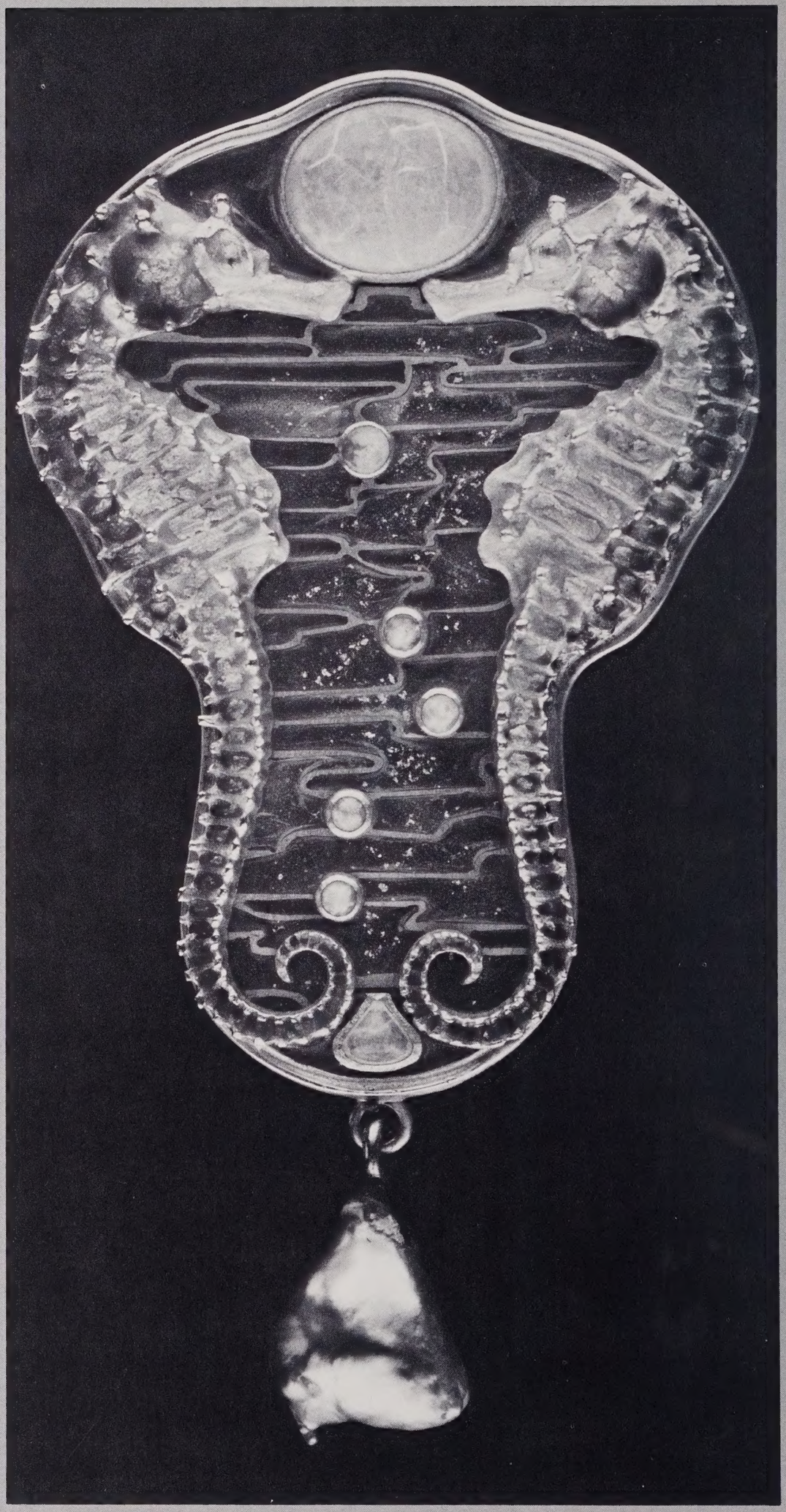
Gold, enamel, opals
and baroque pearl
Height: 9.8cm (including pearl)
Width: 6cm
The Art Nouveau Collection of the
Virginia Museum of Fine Arts
Richmond, Virginia.
Purchased 1973.
The Sydney and Frances Lewis
Art Nouveau Fund.

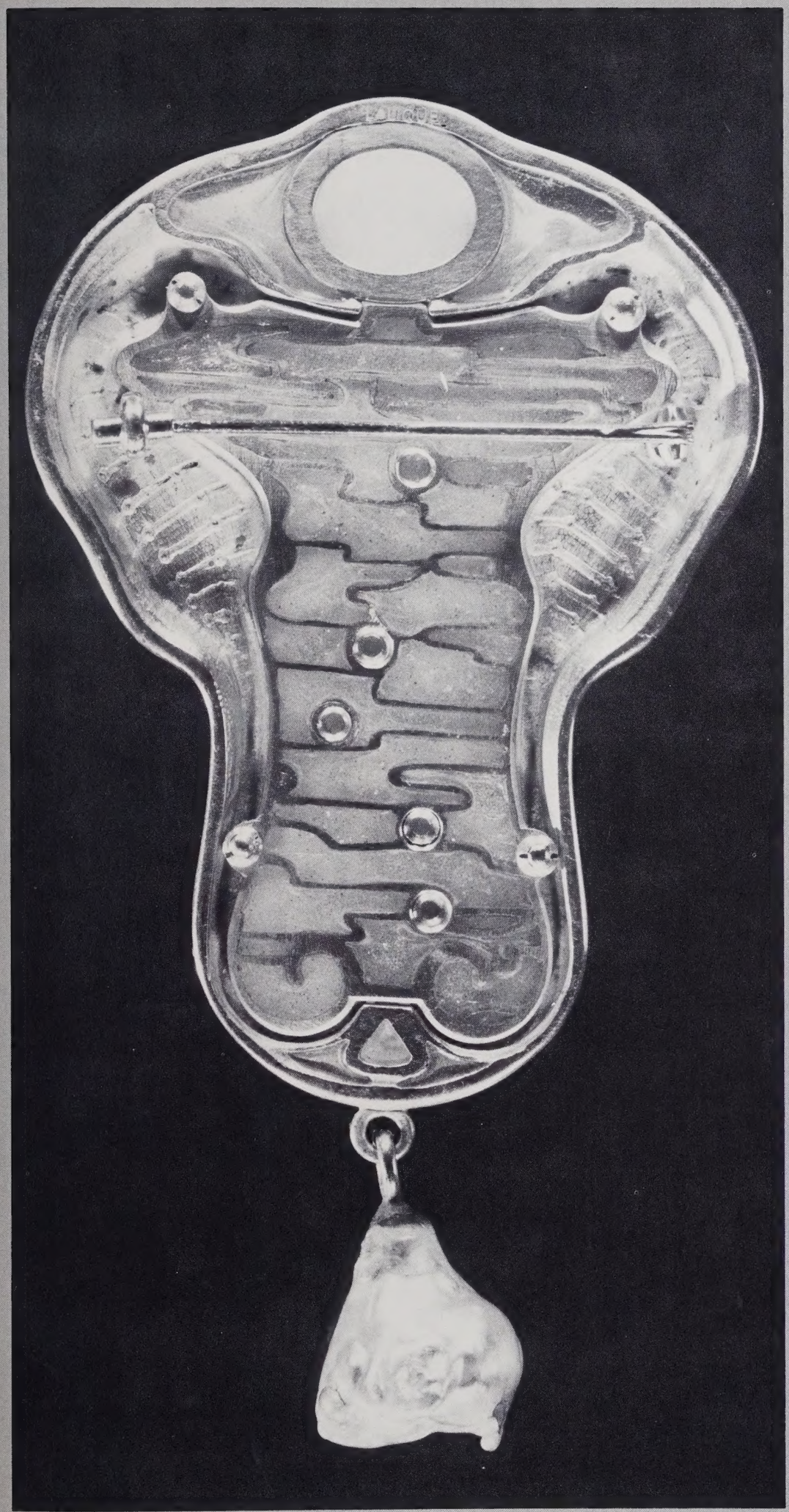
"Lalique" stamped in block letters at top back of frame. Eagle's head in profile (French symbol for gold used between 1838 and 1919) stamped to the left of the maker's mark on the frame and on the pin stem.

There is no known documentation of exhibition of the piece prior to purchase by the Virginia Museum.

Construction Drawing







The jewelry of René Lalique has significance, not only to the Art Nouveau movement, but also for its role in altering the nature of 20th-century art jewelry. Lalique's stylistic creativity and his unorthodox combinations of precious and nonprecious materials paved the way for the artistic freedom that the jeweler/metalsmith enjoys today. These contributions are well documented by scholars of the decorative arts. But for the metalsmith there is another aspect of the creativity of Lalique that has not been documented. The nature of the materials he chose to combine demanded creative solutions to technical problems. The *Seahorse Brooch* discussed here is a fine example of the combination of materials—gold, enamel, opals and pearl—Lalique employed for stylistic effect. For the metalsmith to be able to turn the piece over and discover the technical virtuosity with which these diverse materials have been assembled is an experience equal to the enjoyment of the images Lalique left behind.

Construction

The frame, which includes the two seahorses in relief, the exterior rim and the bezels for the large oval opal at the top and the small triangular opal at the bottom, is cast in gold. From the front the seahorses are enameled "en ronde" in transparent blue-green and purple enamel. Areas to the left and right of the opals (both top and bottom) are of plique-à-jour blue-green enamel. The back has been chased in a stylized simulation of the horny skin of the seahorse and left without enamel.

The area between the seahorses is comprised of a plique-à-jour enamel panel that has been bolted in place from behind. It contains alternating blue-green and purple enamel into which small flecks of gold have been embedded. Five small round cabochon opals have been set in bezels and then mounted to the panel. Each bezel has a tube rivet on the back that has been inserted into a hole of the metal structure of the plique-à-jour panel. The tube has then been flared gently to trap the stone and its bezel in place. This method of construction means that the opals could be set separately before being inserted into the enamel panel. Thus the enamel is not subject to the pressure from setting the stones. In addition, repairs would be facilitated by the fact that the piece could be disassembled. The pin findings are threaded and screwed into housings cast into the frame.

—C. James Meyer

Photos courtesy the Virginia Museum of Fine Arts

On View

Outstanding work of students graduating from college and university degree programs in metalsmithing and jewelry design throughout North America

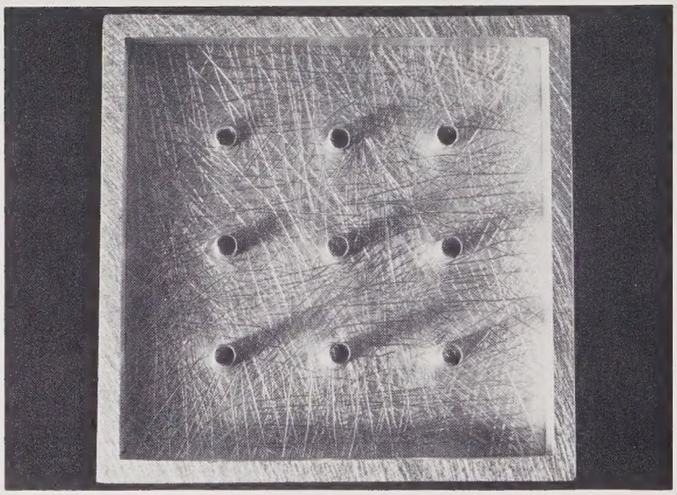
Due to overwhelmingly positive response to our request for student work, Metalsmith *will run "On View" in two parts. The second part will appear in the Spring/82 issue. Program descriptions were furnished by the participating universities.*

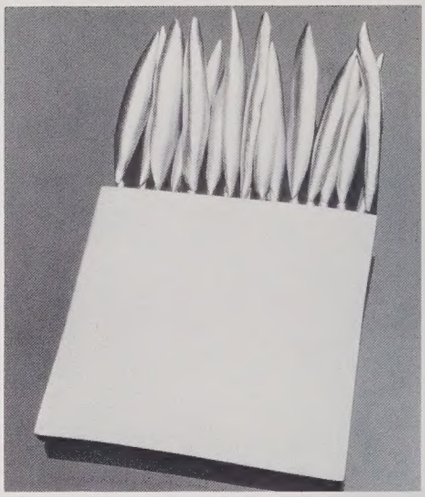
Rhode Island School of Design

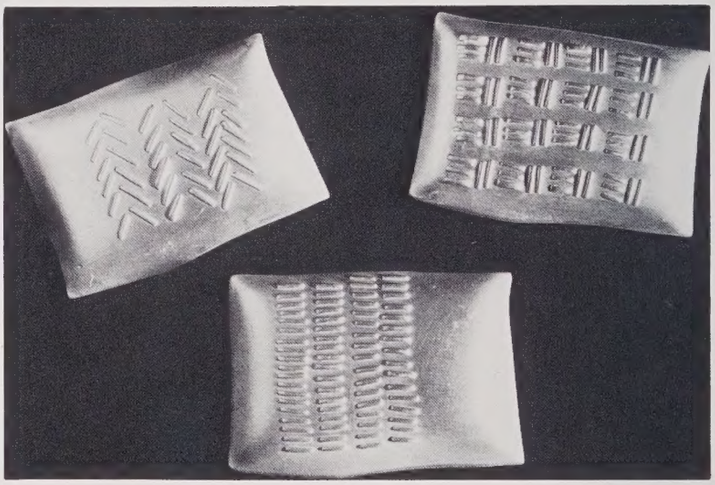
Our program offers both B.F.A. and M.F.A. degrees. Both Jewelry and Metalsmithing techniques are taught, with major emphasis on the development of the students' personal esthetic. The student is encouraged to explore and experiment with ideas and materials. The Light Metals faculty does not expect students to fall within the narrowly defined area of craft. Instead, a broader spectrum of endeavor is encouraged, allowing the student to discover where his sensibilities lie.

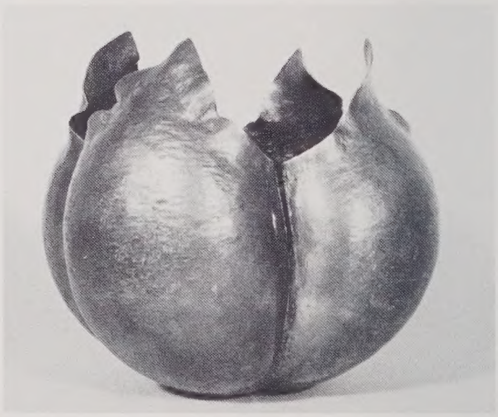
A thesis project is required of all senior and graduate students. This project (subject to faculty approval) can highlight a technical process or esthetic involvement and provides an uninterrupted period for the student to create and solve his own problems. The resulting work is displayed in the form of a gallery show shortly before the end of the student's final semester.

Light Metals Program
Rhode Island School of Design
2 College Street
Providence, RI 02903
Telephone: (401) 331-3511
Louis Mueller









In order from top to bottom: left: Elisabeth Tanner, *Game Board* brooch, silver, copper, 1½x1½" **right:** Susan Rezac, *Brooch,* silver and gold-plated copper; chased, repoussed **left:** Charles Racine, *Container,* copper, bronze; chased, fabricated, 2½x3x6" **right:** Jan Yager, *Hollow Pillow Pin Series,* fine silver; die struck, die formed **left:** Deborah Morris, *Fan,* brass, aspa leaves, sterling silver, 11¾x8½" **right:** Elizabeth Mirguet, untitled bowl, formed copper, 6x6x7" **left:** Edith Armstrong, untitled, bronze and 24k gold plate, 2x3½" **right:** Wendy Smith, *Hollow Bracelets,* bronze, inlayed silver squares and inlayed brass tubing, 1¼" wide

California College of Arts and Crafts

The California College of Arts and Crafts is an independent private art college, fully accredited and granting degrees of B.F.A., M.F.S. and Master of Art Education. It is a member of the Union of Independent Colleges of Art and enjoys a reciprocal student exchange program with the other seven member schools.

The Metal Arts Program is an undergraduate program leading to a B.F.A. degree. It is housed in a new building with excellent facilities and much new equipment, ranging from a large-scale foundry to facilities for bench work in jewelry. Tools and equipment for working in holloware, metal fabrication and electroforming are exceptional.

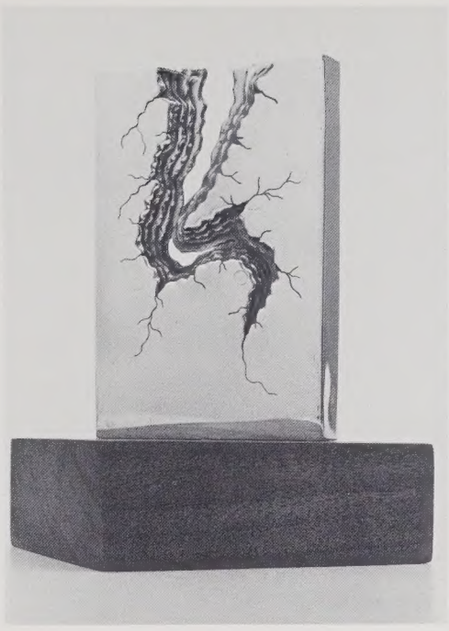
The Metal Arts Program reflects the Fine Arts orientation of the school as a whole. The three faculty members present students with a variety and diversity in approach, but are united in their goal, which is to help students establish their own artistic idiom. A guest metalsmith conducts a special advanced course alternate trimesters, and during the year there are several one-day workshops with metalsmiths from the United States, Europe and Japan invited to present their special area of expertise. During the Second Summer Session a series of Metal Arts Workshops is presented. These are one- and two-week intensive study opportuntities with nationally known metalsmiths. Last summer Jamie Bennett, Enameling, Florence Resnikoff, Electroforming, and Edward de Large, Titanium, were on campus. During the Third Summer Session Roger Baird taught a beginning five-week Metal Arts Class for those students wishing to start their career at CCAC in Summer, rather than in Fall.

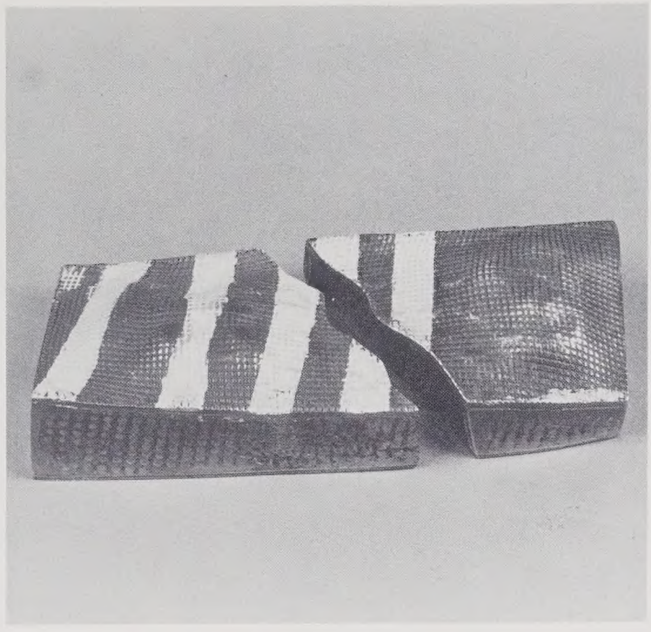
The Metal Arts Program is open to majors and nonmajors. The basic program covers metal technology, piercing, riveting, soldering, toolmaking, forging, raising and casting. The use of masonite and aluminum press dies are introduced for fabricating projects. Surface decoration techniques include roll mill textures, inlay, reticulation, patination and mokume-gane. Special classes cover enameling, holloware, pewtersmithing, electroforming and titanium oxidation. Stone setting and the relation of nonmetal to metal materials are investigated.

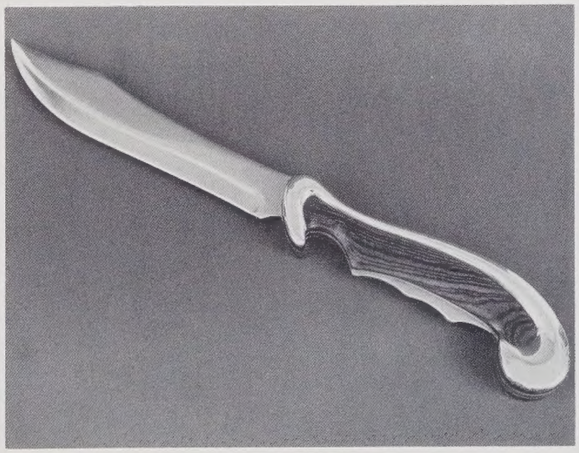
Majors are required to take 30 units of departmental offerings, which include a special design course and "History of Jewelry and Metal Arts." Recommended courses may include "Ferrous and Non-Ferrous Technology", sculpture, photography and courses which complement the Program's requirements. Majors present a Senior Show in their last trimester.

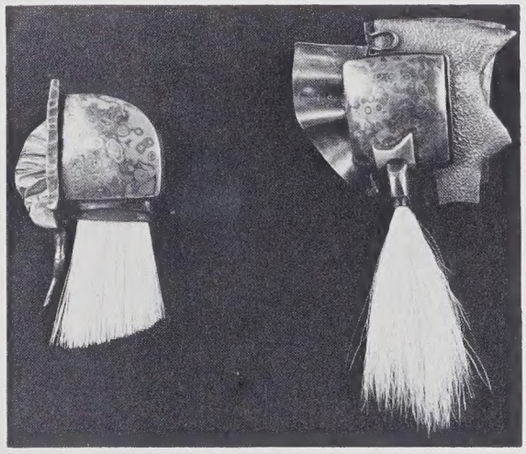
Students who wish to take part in the Co-Op Ed. Program may work part-time in jewelry industry or small design-production jewelry studios in the area. They receive academic credit for their experience, plus wages, while learning about the "real world" of jewelrymaking, which can be of great benefit if they wish to work in the field after graduation.

Metal Arts Program
California College of Arts and Crafts
5212 Broadway Avenue
Oakland, CA 94618
Telephone: (415) 653-8118
Florence Resnikoff
Photos: George Post









Top left: Tsutomu Miyazaki, *Ben Series,* maquette for sculpture, bronze, silver, copper, rosewood **Top right:** Thomas Brown, *California Earthquake Series* pins, copper, silver, roll texture, inlay **Center:** George Catlett: *Teapot,* bronze, resin; fabricated **Above left:** George Catlett, *Knife,* steel, bronze, bogoté **Above right:** Claire Sanford, *Brush Series* pins, copper, silver, reticulated brass, mokume-gane, bristles

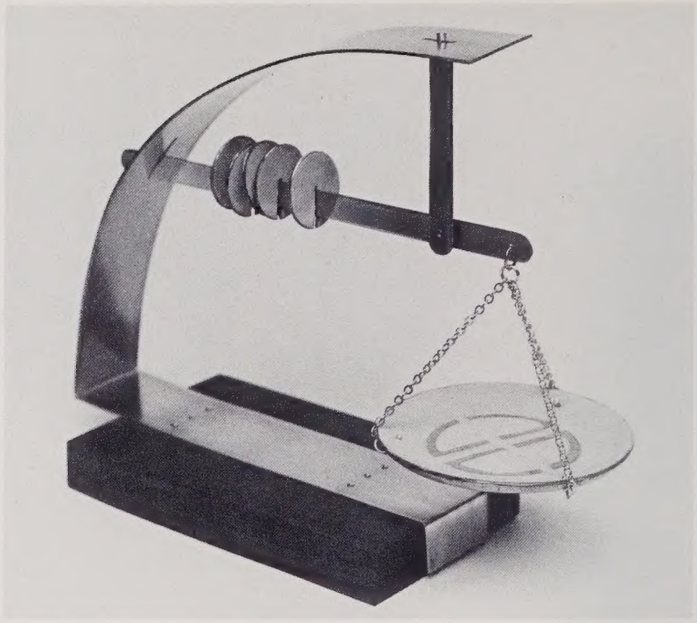
Bradley University

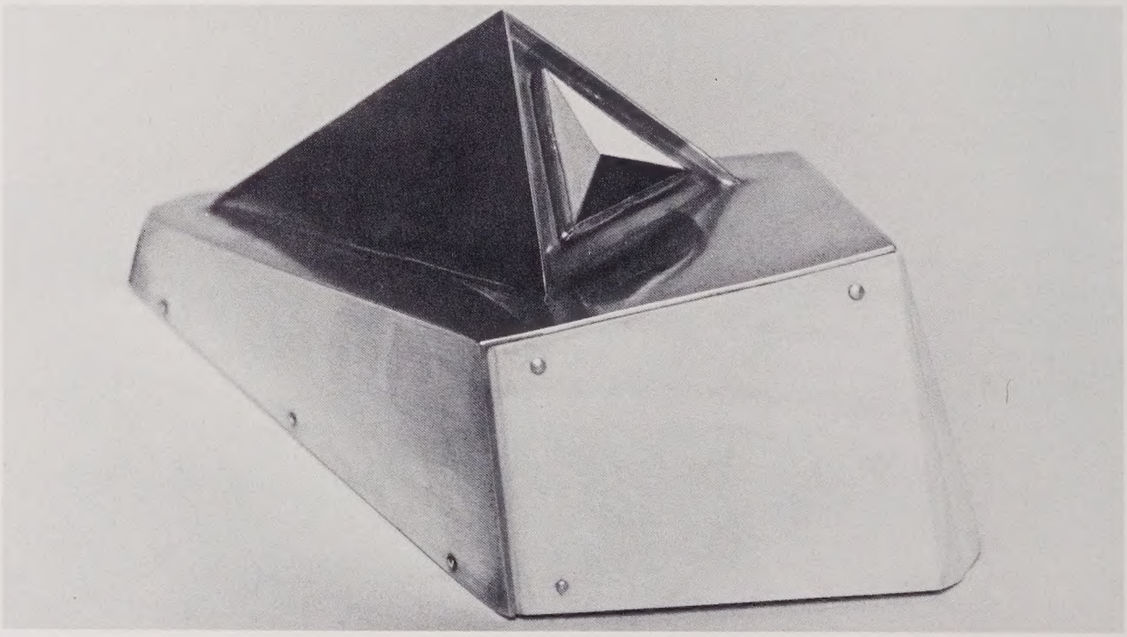
Bradley University is a medium-size, private institution with an enrollment of 4,000 undergraduate and 1,000 graduate students. The campus is located on 60 acres in suburban Peoria, Illinois' second-largest metropolitan area, with Chicago 150 miles to the north and St. Louis about the same distance directly south.

The Metalsmithing/Jewelry program is seven years old. However, until 15 years ago, Bradley offered technical training in the area of horology. The horology school has since moved to Quincy, Illinois, but donated to the University a good number of stakes, hammers and hand tools, which are still being put to good use by the metal students. The program offers the following undergraduate and graduate degrees: B.A., B.S., B.F.A, M.A., and M.F.A.

In addition to raising and fabrication, we offer enameling and casting. A thorough background in foundations and art history is required for all degrees. Interchange between various studios and the investigation of multiple materials is also encouraged. The type of work—fine jewelry, functional, wearable, or nonfunctional, surface and/or form oriented, is determined by the student, with faculty support. A strong background in process and technique is also taught, although technique and process are considered to be "tools," used only to support and execute concepts.

Metalsmithing/Jewelry Program
College of Fine Arts
Bradley University
Peoria, IL 61625
Telephone: (309) 676-7611, ext. 496 or 497
James Malenda





Top left: Pam Myers, *Wall Piece,* enamel, nickel, plexiglass; fabricated, ca. 10" long **Top right:** Bea Van Winkel, *Scale,* enamel, brass, walnut; fabricated, 8x12x4" **Center:** Craig Powell, *Arnon Series,* cast brass; fabricated, raku, each ca. 5" high **Above:** Marg Mendez, *Table Piece,* sterling silver, ivory, enamel; fabricated, 6x10x6"

San Diego State University

The Jewelry and Metalsmithing Program at San Diego State University is part of the Craft Emphasis Area of the Art Department and offers work at the undergraduate and graduate levels. There are two permanent faculty members.

Undergraduate craft majors are required to take course work in at least three of the five media offered (metal, fiber, clay, wood, enamels) and a minimum concentration of nine semester units in one specialization. Courses in metal are also open to all other art majors and, on a space-available basis, to qualified undergraduates from other departments. The mixture of students is welcomed as a positive interaction of disciplines, each having its own particular form vocabulary to bring to metal.

The courses offered at the undergraduate level are each given for three units of credit, meet for six hours of instruction per week and require one major piece of work for each unit of credit. They are as follows: Beginning Jewelry and Metalwork; Beginning Metalsmithing; Advanced Jewelry; Advanced Metalsmithing; Textile Techniques in Metal (open to graduates and undergraduates in metal and fiber).

The graduate program is limited to a total of 10 students who are selected by portfolio review and accepted as space is available. A 30-unit M.A. degree is currently offered; a 60-unit M.F.A. degree is anticipated in the near future. Required courses for graduates include a Seminar in Design Principles, a Seminar in Art History, a Seminar in Jewelry and Metalwork (six units) and a minimum of 18 units in studio work. Except for the seminar, studio work at the graduate level is basically tutorial, with the student presenting project/design proposals to the individual faculty member for approval and guidance. All graduate students meet together monthly throughout their program for a design review and critique on work in progress. Each student is required to do a technical investigation into a subject of personal choice and to make an oral/visual presentation of the findings. A thesis project is required, followed by an exhibition, a written report (kept on file in the University Library) and a set of slides (on file in the Art Department Slide Library).

Spacious and well-equipped facilities were completed in September, 1980 and include a jewelry studio with bench space for 24, a metalsmithing studio, a graduate studio with 10 individual benches and ancillary rooms for annealing and electroplating/anodization. An active program of lectures, demonstrations and workshops by visiting artists is scheduled each year, funded by the Art Department and the Jewelry Students Coop, a student organization which receives grants for special events from the Associated Students. In 1980–81 this program sponsored Wendy Ramshaw/David Watkins, Harlan Butt, Kate O'Sullivan (from Australia), Alan Revere and Albert Paley.

Jewelry and Metalsmithing Program
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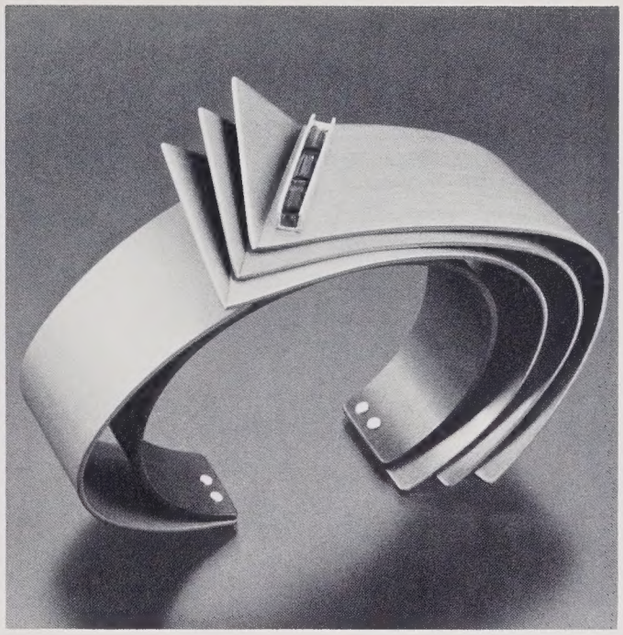
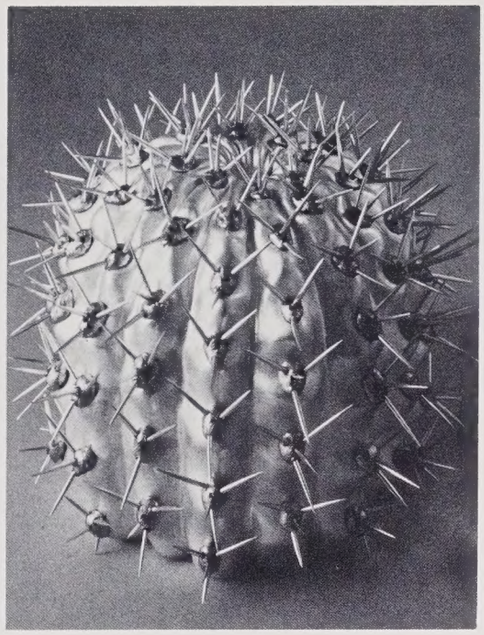
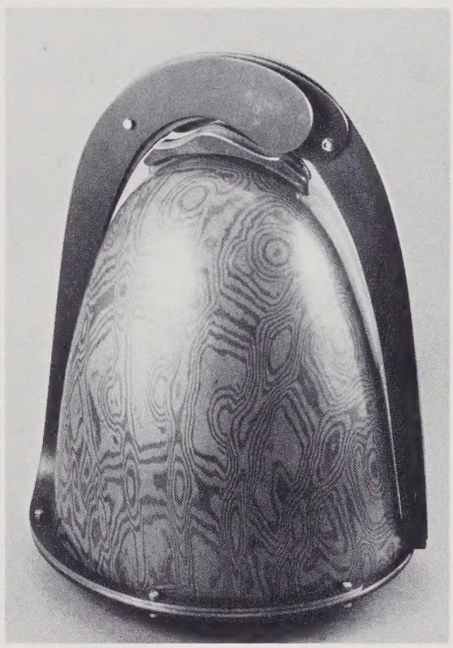
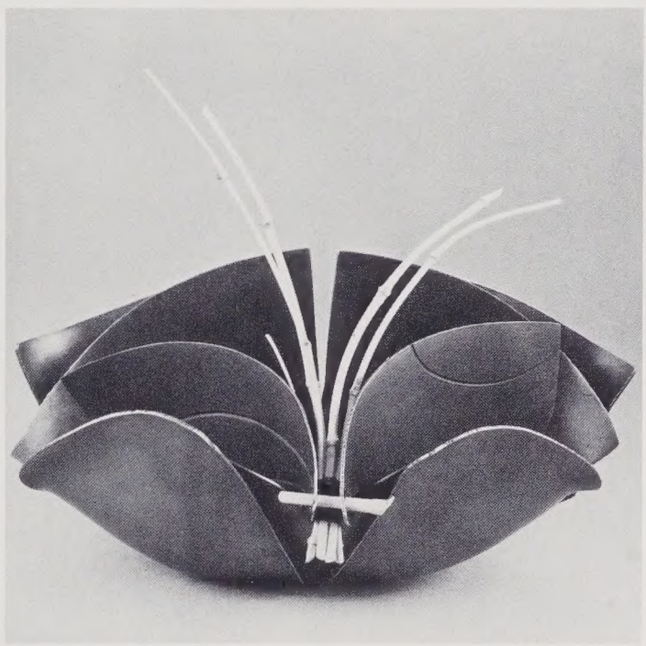
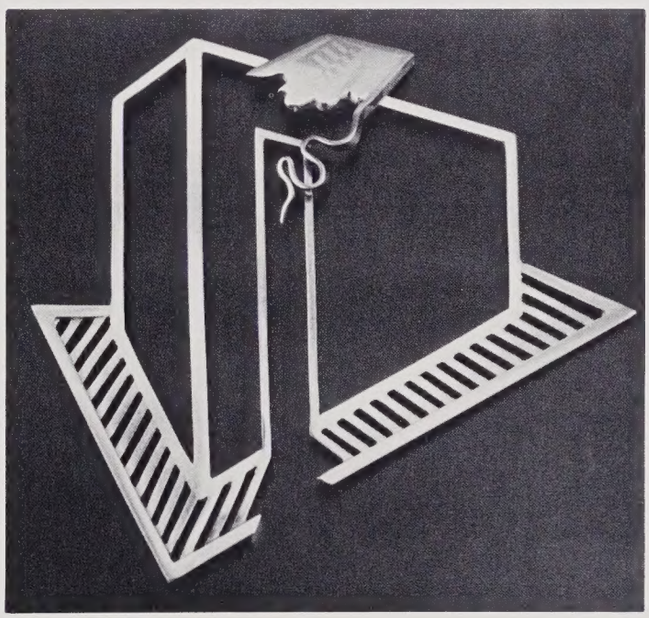
Arline M. Fisch
Helen Shirk

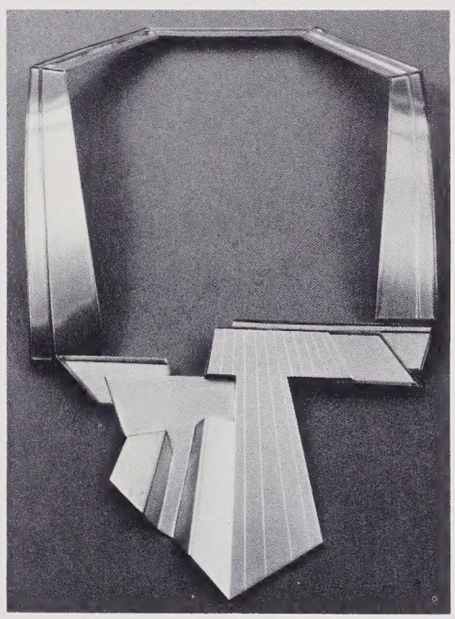












Top left: David Tisdale, *Purple, Pink and Gold* bracelet, anodized aluminum, silver rivets, silver settings, amethyst, rhodalite, utrine, 4½x1¼x2½" **Top right:** Craig Clifford, *Desert Survival Cup,* sterling silver, copper, 14k gold, 24k gold plate; raised, chased, electroformed, 3¾x4¾" **Center left:** David Lee Richards, *Bank,* mokume-gane, copper, brass rivets, 8½x3¾" **Center right:** Michael Tom, *Bamboo Form,* copper, bamboo, 3x6x4" **Above left:** Anne Owens-Stone, *Facade Series 2* brooch, sterling silver, nickel, 14k gold, 3x2⅞" **Above right:** Deborah Love Jemmott, *From Way Down Under* neckpiece, sterling silver, nickel, 13x7½x1½"

Philadelphia College of Art

The Craft department provides studio experience in the processes and materials of four major areas: ceramics, fibers, metals and wood. Craft studies are planned so that the student can acquire a comprehensive understanding of the innate properties of the materials and a full command of manipulative and technical skills. Emphasis is also placed on the investigation of ideas and possibilities through drawing and design. The combined knowledge gained by these studies helps each student develop a personal mastery of material and self-expression.

In the program, majors are encouraged to take at least six credits in a craft other than their concentration in order to investigate more than one possibility and to expand their experience. If the student has demonstrated ability to do successful work in two crafts, he may choose to pursue others as well in the last two years of the program.

The study of crafts at PCA is particularly rewarding because of the extensive crafts resources and professional activity in the Philadelphia area. The Crafts department is committed to providing instruction by artists/craftsmen who are practicing professionals as well as teachers. Students are advised to study the History of Twentieth-Century Crafts, which provides additional exposure to the background and philosophy of crafts.

The program is further enhanced by visits to exhibitions, museums and private collections and by frequent lectures by prominent and distinguished guest artists/craftsmen.

PCA offers a B.F.A. degree in its Metals Program. Upon graduation some students choose to continue study on the graduate level. Increasingly, however, more graduates work as independent artists operating private studio/shops, as teachers of crafts or as consultants to industry and architects. In many cases, individuals combine these pursuits to meet either personal or particular needs and goals.

The goal of the department is to develop artists/craftsmen of individuality and imagination with the resourcefulness to achieve the highest professional and creative level.

Metals Program
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Richard H. Reinhardt
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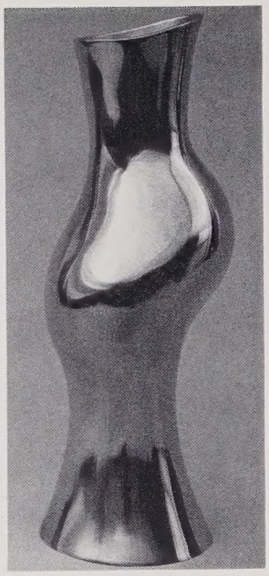

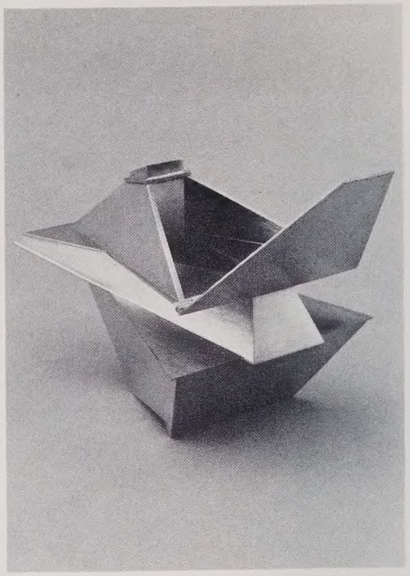

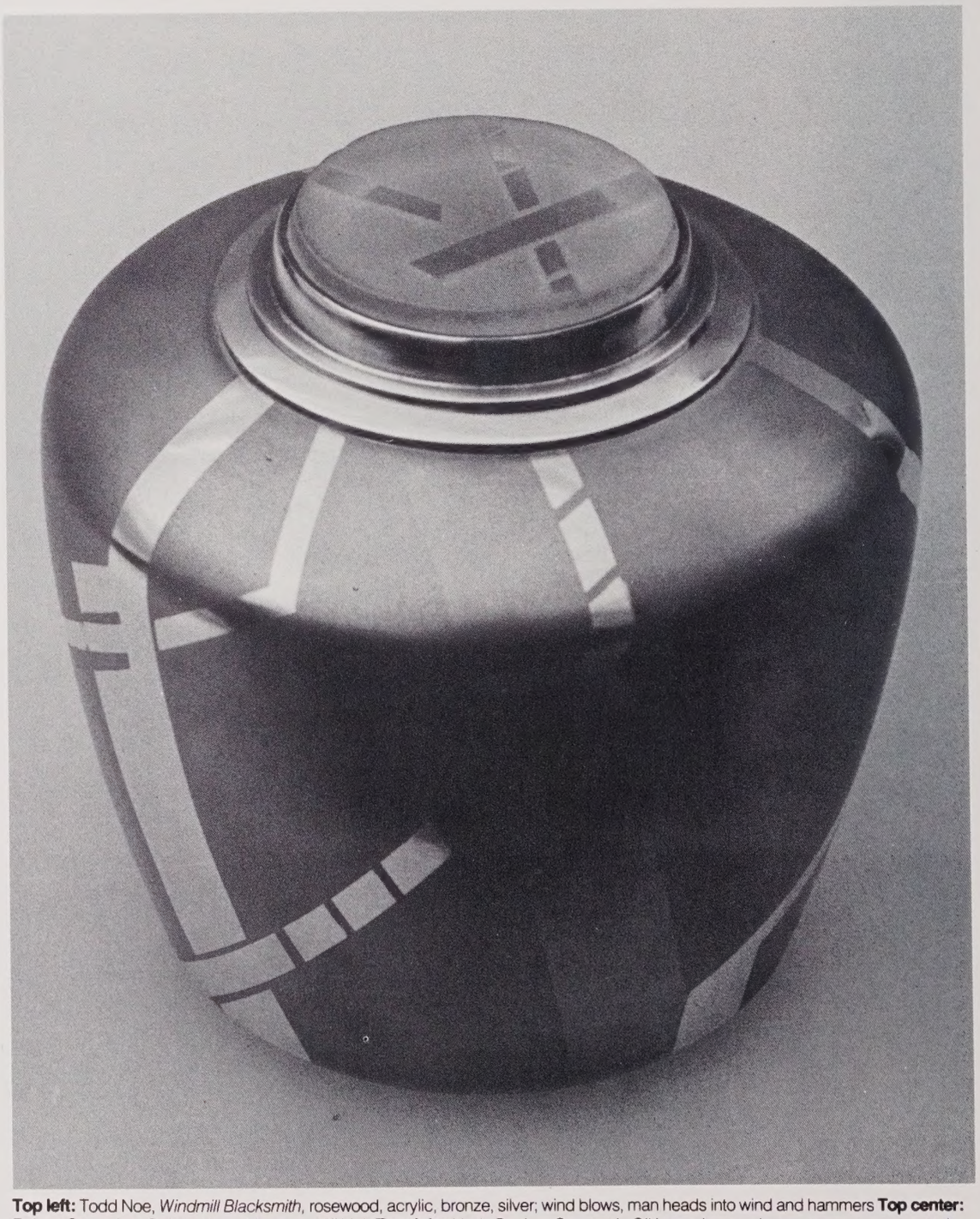

Top left: Todd Noe, *Windmill Blacksmith,* rosewood, acrylic, bronze, silver; wind blows, man heads into wind and hammers **Top center:** Robert Oppecker, *Raised Vessel,* bronze, 10" high **Top right:** Linda Bertino, *Geometric Oil Lamp,* bronze, brass, copper; constructed **Above:** Todd Noe, *Container Two,* bronze body, raised and etched, etched blown-glass stopper

SUNY: The College at New Paltz

Instruction by a highly qualified professional staff is provided in well-equipped studios and is supplement by frequent field trips to museums, workshops and industrial establishments.

The Gold and Silversmithing options in the B.S. and M.S. degree programs in Art Education qualify students to conduct high-quality jewelry programs at the elementary and secondary school levels, and to take part in exhibitions and accept commissions. The B.F.A. and M.F.A. options are designed to educate fully qualified gold and silversmiths who can open their own studios, design for industry or teach at the college and university level.

The offering in the Gold and Silversmithing options consists of jewelry, enameling, holloware and decorative and ceremonial metalwork. Students majoring in the option are expected to be familiar with all areas. In jewelry, students learn all conventional techniques, such as simple and advanced stone setting, fabrication and construction, casting, surface embellishment through repoussé, chasing, appliqué, inlaying, etching, engraving, niello and granulation. Enameling comprises the Limoges, cloisonné, chamlevé, basse taille and plique-à-jour methods. Holloware methods include sinking, stretching, raising, spinning and constuction. At the advanced level, students are expected to solve problems arising from the design of functional, decorative, religious and ceremonial objects. Recognizing the value of a knowledge of the practical applications of these skills and techniques, the program also offers courses in jewelry rendering and small business practices for jewelers and silversmiths.

In addition to their major concentration, students are expected to acquire a background in drawing, design, composition, art history and other related areas in art. A knowledge of basic gemology and basic accounting is also recommended.

Gold and Silversmithing
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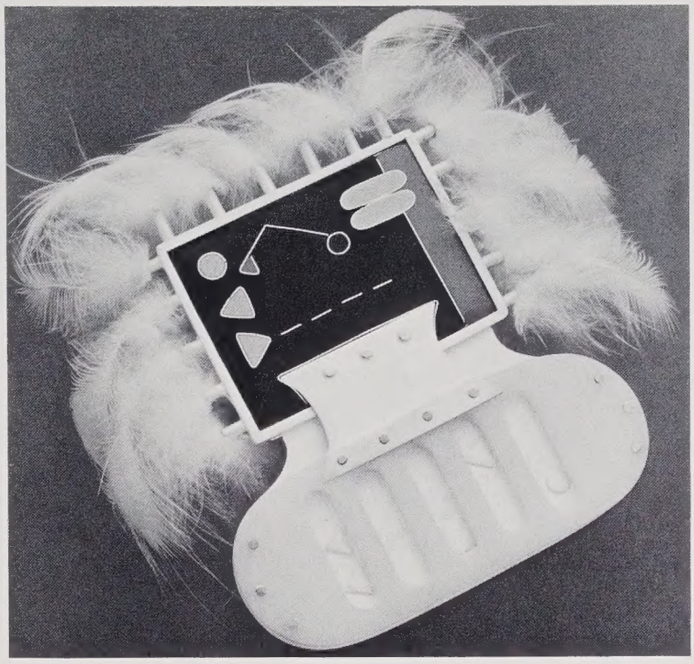
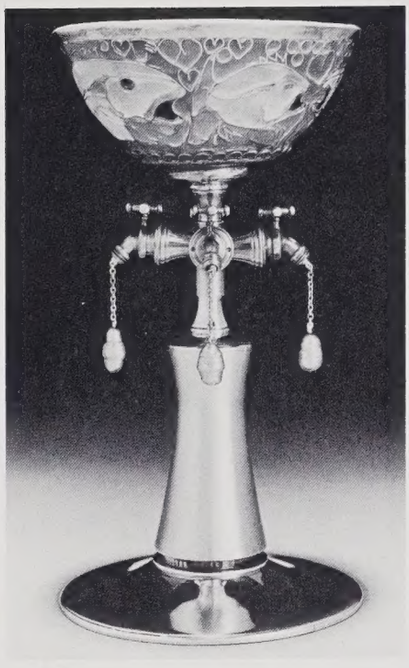
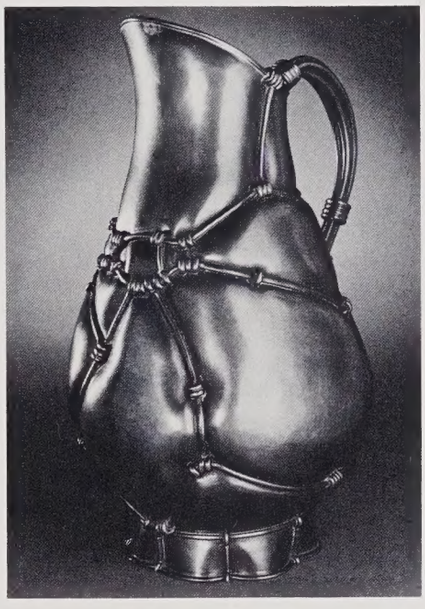
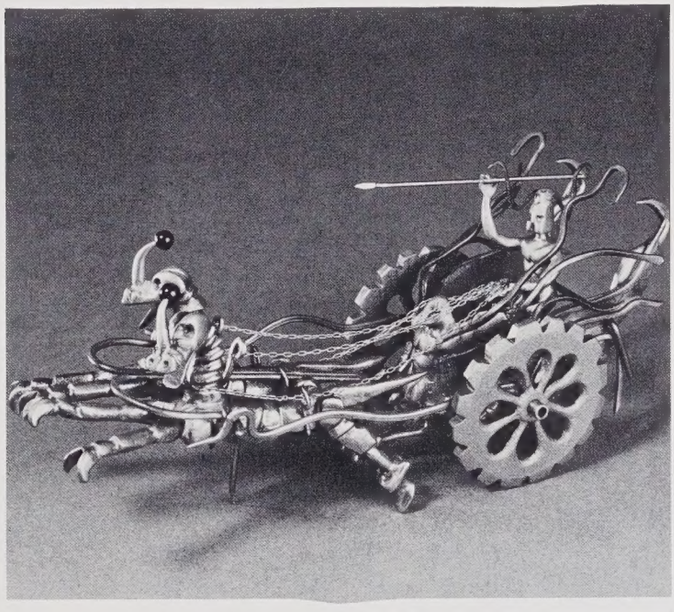
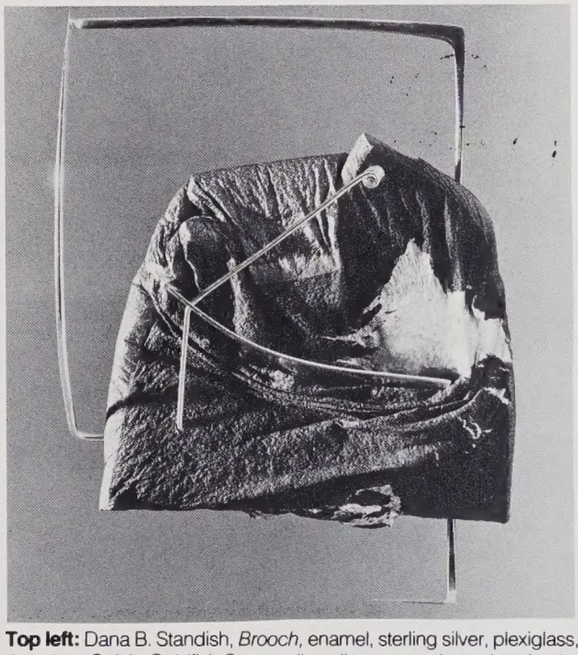
Telephone: (914) 257-2447
Kurt Matzdorf
Robert Ebendorf
Photos: Alan Fairley

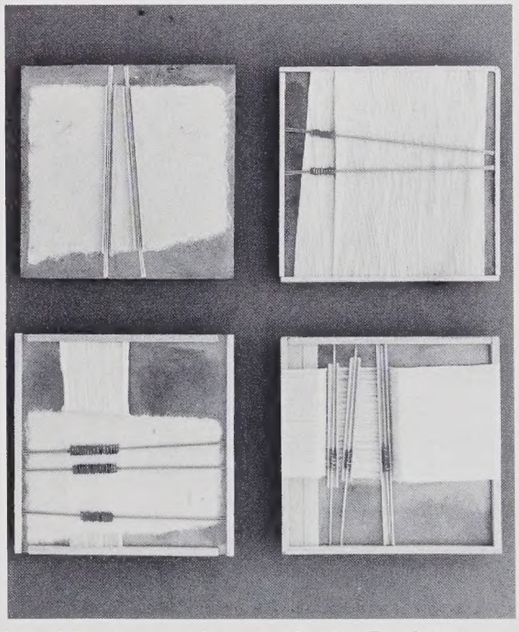










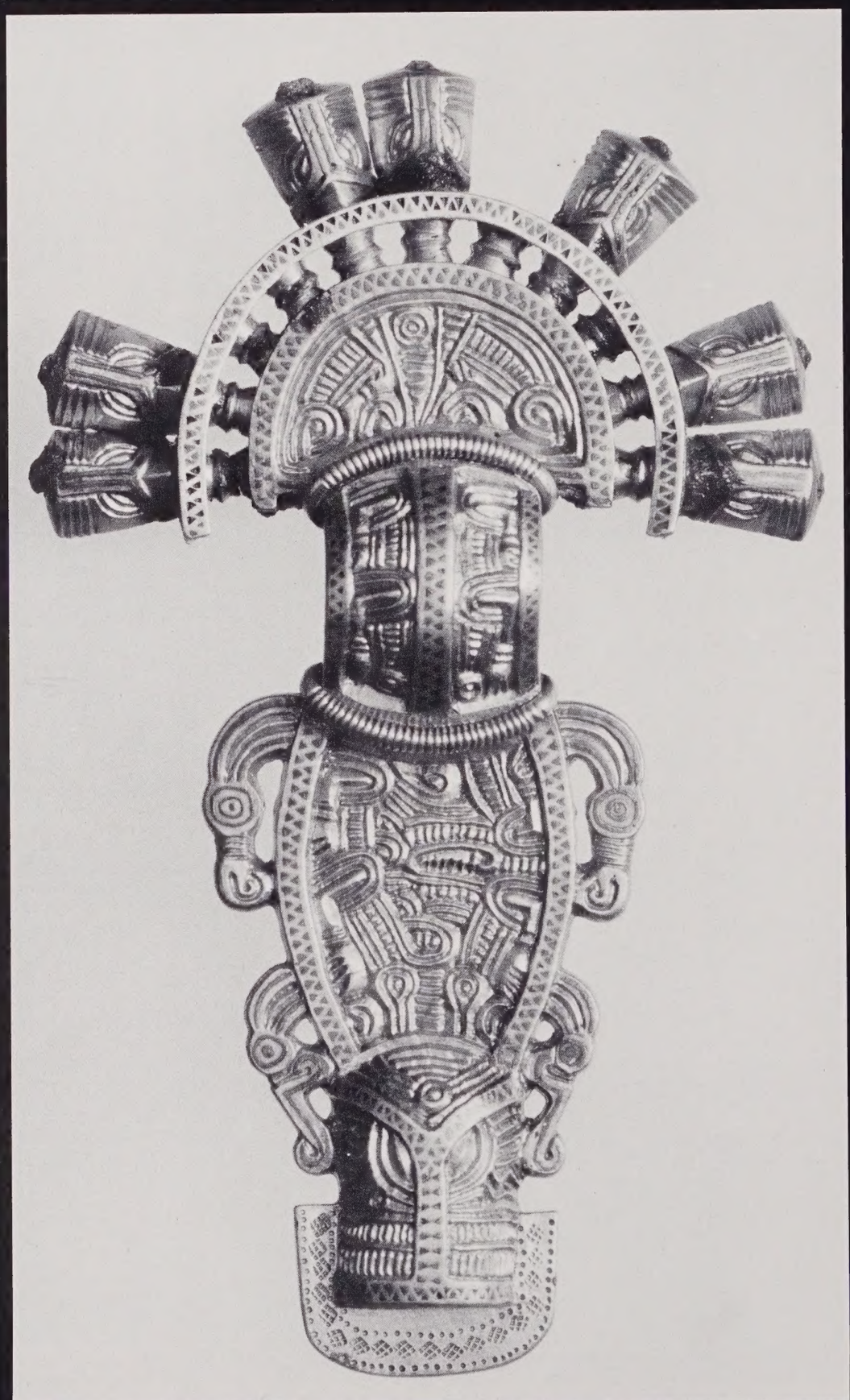


Top left: Dana B. Standish, *Brooch,* enamel, sterling silver, plexiglass, feathers; cloisonné enamel, fabricated, 3½x3½" **Top right:** Jonathan Quick, *Goldfish Cup,* sterling silver, enamel, pearls; raised, cast, fabricated, plique-à-jour enamel, 7x3" **Center left:** Jonathan Cogswell, *Pitcher,* copper; raised, fabricated, 8x4" **Center right:** William Tripp, *Chariot,* brass, titanium; cast, forged, fabricated, 3x6x3" **Above left:** Julie Leveque, *Wall Piece,* sterling silver, aluminum; fabricated, 4x4" **Above right:** Rebekah Laskin, *Four Pins,* copper, wood, rice paper, corn husk, silk; fabricated, each 2x2"

A Metalsmith's Guide to the Met

New York City's ultimate museum

by Bernard Bernstein



Animal Style I Fibula, silver gilt and niello, first half 7th century, Langobardic, 6 5/16x3¾". Courtesy The Metropolitan Museum of Art, Joseph Pulitzer Bequest Fund, 1955

This is a continuing series of metalsmith's guides to cities, regions and museums throughout the world. The purpose of these guides is to give those interested in viewing metalwork during their travels an introduction to the treasures and resources, both accessible and hidden, of a certain place. The tours also document history and tradition in the field of metalwork.

Metalsmith *magazine encourages submissions of ideas for these guides. The tours should focus on a single location and be illustrated with maps, line drawings and photographs whenever possible. Metalwork can be found all around us in both urban and rural environments. No place is too remote to mention—an exquisite bronze bust in a hotel lobby, a certain iron grill in New Orleans, knives in a fishing tackle store. Here is a chance to share your favorite places and works with others. Send submissions to: Sarah Bodine, Editor, Metalsmith, 35 West 84th Street, New York, NY 10024.*

Most people who live in New York sooner or later invent or discover reasons for putting up with it. For me, one of its crowning values is its more than 50 museums, with the Metropolitan as the central jewel.

As a person interested in metalworking, I have explored the collections in many of New York's museums and finally learned what to look for in the museum of the City of New York, the New York Historical Society, The Jewish Museum and the Museum of Modern Art.

The Metropolitan Museum of Art, however, proved to be a labyrinthine challenge. I was never able to get a fix on the place no matter how many times I went back. Its metal collection is immense, in contrast with the other museums, and it is virtually impossible to absorb it in one day, even if you jog through the galleries. The collection is also distributed all over the museum because it is grouped sometimes historically, sometimes geographically and sometimes topically. It is continually being shifted around as the museum adds, subtracts, renovates and relocates its many galleries and exhibition areas.

I became motivated to reduce the Met to a manageable system some years ago when I began sending my students there to seek inspiration; also I occasionally found myself acting as tourguide for visiting metalsmiths interested in seeing the most metal in the least time.

The guide book for sale at the museum is beautifully made, but it includes everything in addition to metal. Searching through the book is like searching through the museum itself. This metalsmith's guide to the Met can help you if you want to see it all (well, almost all) once over lightly, or if you have some special type of metalwork you want to go to directly.

The Metropolitan Museum of Art is on Fifth Avenue at 82nd street. It's closed Mondays, open Tuesdays from 10:00 to 8:45, Wednesday through Saturday from 10:00 to 4:45 and Sundays and holidays from 11:00 to 4:45.

A word of caution: the museum, like so many other institutions, has financial problems and is trying to deal with them by closing some areas during weekdays, usually for part of a day. On weekends you can expect all the areas to be open. If you plan to visit the museum on a weekday it would be wise to call first to find out what is closed. The telephone number is: (212) 879-5500. If you have a car, forget about street parking unless you have a lot of time to cruise around. The museum has a parking garage. In the long run it may turn out to be cheaper than gas and time wasted driving around.

Admission to the museum is by contribution. You can take pictures and make sketches, but no flash is permitted. On weekends no tripods can be used and photography is prohibited in the special exhibitions.

The museum consists of three levels, called the ground floor, main floor and second floor. If you climb the Fifth Avenue steps you will be on the main floor. The first thing to do is pick up a free floor plan at the information desk, because the floor plans in this guide are based on it. If you work with both plans you can find the treasures very easily.

Unless you want to see only specific types of work, I would recommend that you deal with one floor at a time, and that you start at the ground floor and work your way up. My reason is that the ground floor has a fine introductory exhibit called "Understanding Silver," which is a living textbook on the techniques of silversmithing, surface ornamentation, hallmarking, and so on. Real objects from the collection are used to illustrate the information presented. This small exhibit prepares you for the rest of the museum, and if you have a companion who is not a metalsmith, it will save you much teaching. So let's begin the tour.

Ground Floor

This area is known as European Decorative Arts. It is reached via a stairway behind and to the left of the grand staircase, which will eventually take you to the second floor. This section includes ceramics and glass as well as metal.

Understanding Silver: described above.

Eighteenth-Century French Silver: This gallery, devoted exclusively to French silver holloware gives some indication of the heights of technical virtuosity achieved by Western European silversmiths during this period. Pieces shown are primarily for domestic use and include trays, tea and coffee pots, ladles, soup tureens and candlesticks.

I am especially fond of an intriguing piece called a perfume burner, which is ornamented with superb engraving and piercing. It is to your immediate right as you enter the gallery. You will also see, in a case in the middle of the room, a group of pieces by the French master Jacques-Nicolas Roettiers.

English Silver: This gallery, adjacent to the French silver collection, once housed an outstanding group of English silver holloware pieces. It included the work of Paul DeLamerie, Thomas Heming and other English masters. The gallery is presently closed for renovation.

Goldsmiths Work and Horology: a glittering collection of clocks, watches, nautical instruments, snuff boxes, renaissance jewelry and liturgical objects, in gold, silver, steel, enamel and precious stones. Look for the gold chalice made in 1608, the gold binoculars and the silver automata. Expect to spend a very long time in this room.

Main Floor

Byzantine, Early Christian, Gallo-Roman Jewelry and Metalwork: This long, narrow gallery is just left of the grand staircase. It leads you to all the metalwork on the Main floor except the Egyptian. Look for an immense gold Celtic torque (1st century, B.C.), fibulae, silver containers and utensils, ivory work, granulation and fragments of "gold glass," a sandwich of pierced gold foil between two sheets of glass.

Sixteenth-Century French Pruning Tools: As you enter this gallery, which is primarily devoted to Gothic and Renaissance small bronze sculpture, look behind you on your right for a wall-mounted case containing several ornamented steel tools.

Eighteenth-Century German Silver: This is silver made in Germany, not the cupro-nickel alloy. The silver in this gallery is to be found in a single showcase at the right rear of the room, and in a large 18th-century Belgian oak cabinet on the left side of the room.

French Snuff Boxes and Silver Holloware: This small, alcovelike gallery has a fine collection of brilliantly executed French 18th-century gold snuff boxes. The works incorporate a variety of techniques, including repoussé, engraving and pique inlay, which is an inlay of metal into tortoise shell. The same gallery contains a small group of French silver holloware.

The Robert Lehman Pavilion: This is a museum within the museum. It contains the collection of diverse art objects amassed by Robert Lehman and his father and is displayed in a manner that closely follows the final arrangement in the Lehman residence. The period covered by the collection ranges from the middle ages to modern times. Objects of interest to metalsmiths are distributed through the various rooms of the pavilion and include medieval German aquamaniles and some very impressive brass chandeliers.

Medieval Metalwork and Enameling: Because religion was such a pervasive force during the millenium that made up the Middle Ages, it is not surprising to find that almost every item in this gallery is liturgical in content and function. The exhibit recalls the treasure rooms of the medieval monasteries and cathedrals where the precious objects were safeguarded. It is evident that the "dark ages" were anything but dark as far as the technical and expressive aspects of metalworking were concerned. The work comes from many sources: Byzantine, Barbarian and Christian. Emphasis is on enameling and examples of cloisonné, basse-taille, champlevé and limoges are plentiful. The function of these objects is also fascinating. You will see chasses (containers shaped like gabled houses used for storage of holy relics), Bishops croziers, plaques, aquamaniles (water containers used for ritual and secular hand-washing), chalices, double cups, medallions, censers, reliquaries, candlesticks and monstrances.

Eighteenth-Century English Silver: Unlike the concentrated collection of English silver which was located on the ground floor, this collection is combined with English decorative arts and furniture. You will also find some of this silver as part of the decor of an 18th-century English dining room. The work of Paul De Lamerie, Paul Storrs, Thomas Heming and Metthew Boulton can be found here.

Seventeenth-Century English Silver: This area has a variety of English decorative arts and period rooms as well as English domestic silver. Don't miss the gargantuan, three-and-one-half-foot long, silver-gilt repoussé sideboard dish made in London in 1680.

Arms and Armor: The Met has the largest collection of arms and armor in the United States, and though only a fraction of its 15,000 or so pieces is on view, you can easily spend many days in this one gallery being staggered by the skill, ingenuity and creative imagination of the armorers, goldsmiths, gunsmiths and cutlers who produced these works. Living in New York has made it possible for me to indulge in the luxurious passtime of zeroing in on details of objects in this room which are missed by the average museum-goer who gulps down a thousand hours of labor with the sweep of an eye. For the sociology-minded among us, it is interesting to consider that much of the armor here was meant for parades rather than warfare, and also that the tyranny of fashion once governed the design of armor as it now does blue jeans. You can see ruffled skirts frozen in steel and puffed and slashed steel sleeves with velvet showing through to resemble combat wounds. If production work bores you, you will appreciate the mail shirt with its quarter-of-a-million interlaced, forged, punched and riveted rings. I'm sure this kind of work kept the apprentices off the streets and out of trouble.

Egyptian Jewelry and Metalwork: In recent years the galleries of Egyptian Art have undergone extensive reconstruction and the result, in terms of modern principles of exhibition design, is beautiful and educational. I only wish they had left the gold room alone. True, the showcases looked like they had come from the tombs themselves, but there were over a dozen of them and they were crammed full of Egyptian gold and silver, ranging from about 2000 B.C. to 300 A.D. I spent many an hour in that room, marveling at the diverse processes these ancient people had mastered. Now a small part of

the original material is on display and it is spread among several vitrines along with ceramics and other Egyptian arts. Some of the spectacular pieces are missing. The current system is fine if one is interested in a chronological panorama of the arts of Egypt. However, don't skip this area. There is still much to see. By 1983 the museum hopes to reopen the gold room. If you have time, look for a gallery of facsimiles of Egyptian wall paintings near the elevator. These tomb paintings depict scenes of ancient craftsmen at work on pottery, leather, furniture and metalwork. You can get a free, very well-designed guide to the Egyptian collection at the information desk.

Second Floor

Twentieth-Century Metalwork: As this guide was being written the 20th-century art galleries were being altered. The metalwork is essentially in the same place, namely in a room to the left of the grand staircase. The galleries to the right of the staircase now also have 20th-century painting, and these changes will no doubt show up on the museum's revised floor plans. Unfortunately, some of the modern metalwork has suffered the same fate as the Egyptian gold, but you can still see a remarkable plique-à-jour cup made in 1901 by Gustav Gaudernack, Art Nouveau objects by Charles Ashbee, a piece by Josef Hoffman and a very interesting Weiner Wekstatt jewelry box by Dagobert Peche.

Greek, Roman and Etruscan Metalwork: This area includes a wide range of metal objects, with an emphasis on bronze utilitarian pieces and small sculpture. Featured are household utensils, vessels, helmets, mirrors, equestrian fittings, strigils (for scraping the body following a bath) and a chariot. Outstanding objects in precious metals include a Greek gold libation bowl and a large Etruscan gold pectoral with stamped repeated shell and animal motifs.

Ancient Near Eastern Gold and Silver: The old cliché about good things coming in small packages applies to this gem of an exhibit in a small gallery. An hour spent here can be a very humbling experience when you realize that you are looking at fairly large works, primarily in gold and silver, that were executed beginning about 3000 B.C. in places whose names are synonymous with the birth of metalworking arts and skills. Objects in many materials, from Babylon, Ur, Sumer, Anatolia, Mongolia and Afghanistan are here. Scythian, Sassanian, Parthian, Kurdish and Achamaenian works are here. Vessels and jewelry make up the bulk of the metalwork. Look for the gold lion's head drinking cup and ask yourself how the twisted gold wire below the rim was drawn to about 1/125 of an inch in the fifth century B.C.

Islamic Metalwork: If your mind is not completely boggled by the work you have seen until now, it will be after you have gone through any of the 10 galleries that constitute the Islamic art collection. To do it and yourself justice you should set aside at least a couple of hours for this area alone. At its apogee the Islamic world stretched from Spain through Sicily, North Africa, Turkey, the entire Middle East, Uzbek, to India and beyond. Works in all media, as well as metal, from every corner of the Islamic world are brought together here in one of the most arresting exhibitions the museum has to offer. The metal objects are distributed through all the galleries, so you will have to walk through the whole collection to see the granulation, gold and silver inlay in steel, brass, bronze and jade; watered blades, enamels and filigree. Objects include arms and armor, jewelry and vessels of all kinds. Some of the most exquisite metalwork man has ever produced resides here.

American Silver and Pewter: The newly opened American Wing is a complicated structure because its vertical plan has had to accommodate itself to the articulation of an old wing and a new wing. The result is a kind of split-level arrangement with a total of five floors. Fortunately the museum has published a separate floor plan for the American Wing that will be useful to you if you wish to see it all. If you examine the whole wing you will find metal objects here and there, especially in the period rooms. However, if you are interested in the highly concentrated, elegantly displayed collection of American metalwork, the floor plan included with this article indicates where it is. The installation covers a period from prerevolutionary baroque to the industrial designs of the thirties. In between you will find rococo, federal, eclectic, art nouveau and art deco. Early makers include Myer Myers, Paul Revere, John Coney, Benjamin Wynkoop, Simeon Soumaine and Jeremiah Dummer. Later famous names include Tiffany and Gorham. There are some pieces that stain the meaning of the word "extravagant," such as the *Adams Vase,* made around 1895 by Tiffany and Company. Eighty-three artists, including 18 goldsmiths worked on this gold, enamel and semiprecious stone object. It is clear that now the museum is attempting to educate the visitor more assertively than in the past. You can expect to spend more time reading technical and art-historical data about each piece and each style.

Far Eastern Art: This discussion is about an important body of metalworking arts which may not be available for public viewing in its complete form for many years. The development of the galleries of Far Eastern Art began about 10 years ago and the completion of the first phase has just been marked with the opening of the Astor Court, the Ming room of Chinese furniture and the Douglas Dillion Galleries of Chinese Painting, Calligraphy and Decorative Arts. Eventually, the Northeast corner of the second floor of the museum will include galleries for Japanese, Korean, Southeast Asian, Indian and ancient Chinese art. It will be among the best in the world. Very little metalwork is displayed now. The Chinese gold filigree bracelet in the Douglas Dillion gallery is the piece to look for. I do not know what metal objects will finally be revealed but I am sure they will be worth waiting for. With a little luck we should be able to see again at least the Chinese cast bronzes, the gold crown and the Japanese arms and armor. So visit this part of the museum. It can only become more resplendent as the years go by.

Musical Instruments: If you have the time, and spend it in this handsomely presented gallery, you will not go unrewarded. The musical instruments shown here combine a wide variety of materials, superb technical execution and imaginative and inventive use of two- and three-dimensional ornament. Many artists and craftsmen find new forms and technical approaches in fields away from their own. Consider this collection a good place to replenish your muse.

Other Attractions

Daily Events: Directly behind the information desk on the main floor are bulletin boards listing free films, lectures and gallery talks scheduled that day. Occasionally these will cover topics of interest to metalsmiths. At the desk you will find information on future events.

Special Exhibitions: Museum-going is a growth industry in this country, and the museum has responded with special exhibitions that produce waiting-line crowds. The Met has been especially thoughtful of metalsmiths in recent years, showing King Tut, Treasures of early Irish Art, Vikings, 5000

Top: *Jewel Box* by Dagobert Peche, Austria, silver gilt, ca. 1920, 5½" high. Courtesy The Metropolitan Museum of Art, Anonymous Gift, 1978 **Center:** *Rhyton,* Iran, gold, 5th century B.C.—Achaemenian Period, diam. ca. 6¾", mouth, 5½". Courtesy The Metropolitan Museum of Art, Harris Brisbane Dick Fund, 1954 **Bottom:** *Ewer,* Persia, brass, engraved and inlaid with silver, ca. 1250—Saljuk Period. Courtesy The Metropolitan Museum of Art, Rogers Fund, 1944

Years of Korean Art, Gold From the Lands of the Scythians and others. It pays to check the dates. Waiting lines are long during the early weeks of a special exhibit. Week days are better than weekends.

New Acquisitions Gallery: The museum has just opened a new gallery that will be devoted permanently to the display of recent acquisitions. This gallery is on the second floor just left of the grand staircase. Exhibits will probably change every couple of months so it would be worthwhile to find out what is being shown there when you visit the museum.

Museum Shops: There are shops in different parts of the museum where you can buy slides, picture postcards, posters, reproductions and books. Much of this material is of interest to metalsmiths. See the museum's floor plan for location.

Photography Library: On the ground floor, near the Junior Museum, you will find the Photography Library. You can buy black and white prints of any of the thousands of objects in the museum's collection. A brochure describing its complete range of services and prices is available in the library or by mail. Telephone: (212) 879-5500, extension 228, 368.

Slide Library: If you are able to come to the museum to make your own selection and will use the slides for education or other nonprofit purposes, you can rent any number from the museum's collection, which currently exceeds 130,000 slides. The Slide Library is located near the Photograph Library and also offers a free brochure giving complete information on its services and rates. Telephone: (212) 879-5500, extension 261.

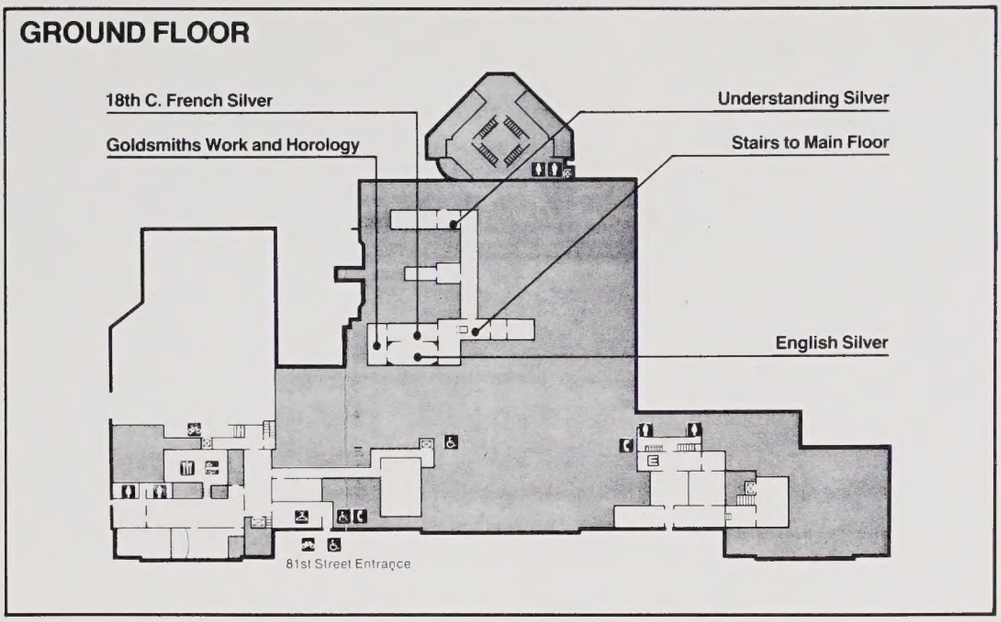
Library: Walk through the Blumenthal Patio on the main floor and you will be in the most comprehensive art and archeology library in the Western Hemisphere. The Thomas J. Watson Library is primarily for the use of the museum's staff, but privileges are extended to qualified researchers and graduate students with appropriate identification. In effect, this means that most members of SNAG and readers of *Metalsmith* magazine may qualify for access to this outstanding research facility. A brochure giving additional information is available at the library.

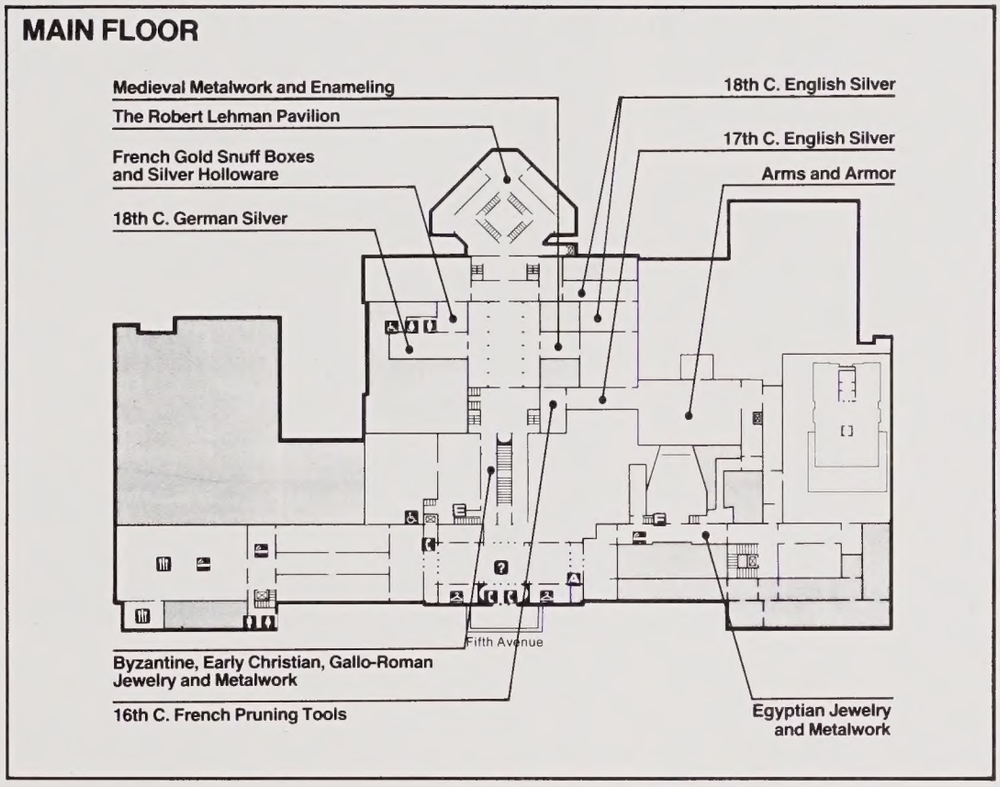
The Fountain Restaurant: You have been feasting your soul all these hours. It is time to feed the body. The restaurant has a bar, elegant decor and good food at rational prices. All this, surrounding a large rectangular pool/fountain featuring the bronze sculpture of Sweden's Carl Milles.

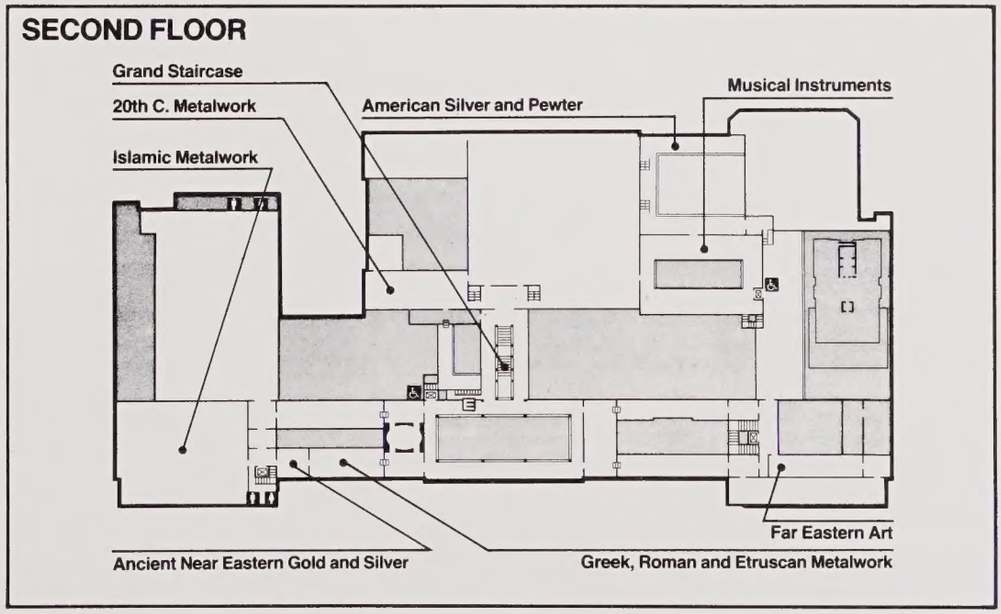
The Cloisters: High on a bluff overlooking the Hudson River, near the Northern end of Manhattan, you will find the Cloisters, reigning over one of the most magnificent scenic panoramas available in New York City. The Cloisters is part of the Metropolitan and its collection complements that of the museum's Medieval Art Department. Information about the Cloisters' hours, location and how to reach it is printed in the floor plan you pick up at the museum's information desk. The reason I mention the Cloisters here is that it, too, has a collection of metalwork, the richest part of which is located in the Medieval Treasury, on the ground floor. If you are a metalsmith and you have never seen the Cloisters, let this be your first priority after the Met itself.

Postscript

The Metropolitan Museum of Art is an institution that lives, grows and constantly evolves. This is what makes it one of the most dynamic and consistently satisfying museums in the world. Having spent so many hours wandering its galleries I am also convinced that its collection, luckily for us, is very heavily skewed in the direction of the metalworking arts. So, if, as you attempt to use this guide, you find that some objects are not where I said they should be, you can ask about them at the desk. But even if you don't find them, you can rest assured that what you have seen is the best. Enjoy it.




MAIN FLOOR
Medieval Metalwork and Enameling
The Robert Lehman Pavilion
French Gold Snuff Boxes and Silver Holloware
18th C. German Silver
18th C. English Silver
17th C. English Silver
Arms and Armor
Fifth Avenue
Byzantine, Early Christian, Gallo-Roman Jewelry and Metalwork
16th C. French Pruning Tools
Egyptian Jewelry and Metalwork



Floor plans

Exhibition Reviews

Cutting Edge
National Ornamental Metals Museum, Memphis, TN
June 8–July 3, 1981 (and traveling)
by Klaus Kallenberger

Excitement and delight were my first reactions to "Cutting Edge," a show circulated and organized by the Southern Arts Federation and the Kentucky Arts Commission. Many edges were tools exquisitely designed for the eye as well as the hand. There were knives, a chisel, axes, cookie cutters, a razor and a cheese cutter. The cutting edge theme extended to runners on a sled, a pair of pancake turners and sculptural forms.

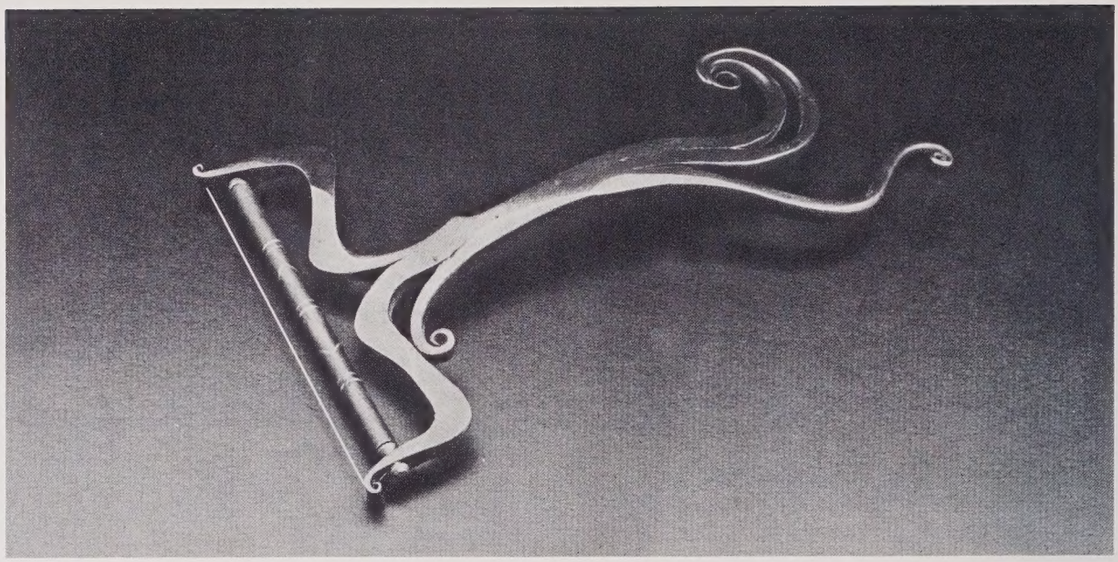
The objects in this show were beautifully crafted. Surfaces were well finished, details sensitively perceived and materials appropriately chosen. Color was a strong concern as was texture. Damascus steel, blued steel, wood, ivory, enamel, brasses and bronzes were skillfully assembled.

The show was heavy on personal expression. In some cases objects were quite removed from function, a trend in the craft movement in general. Some objects straddled the fence between the functional and the purely esthetic. If these articles are to be issue-oriented statements, then the forms and the elegance of surface divert one's attention from the issue. I find it similar to the dilemma of the car. Its function as conveyance has been heavily overlaid with personal expression of status, power and independence. Purely functional vehicles can only be found in the military. The direct utility of Phillip Baldwin's ax or the pure delight of Jim Wallace's sled were easily seen as honest craft. Yet, Robert Griffith's "Assault on a Cube," Scott Fredenburg's "Wind Worshiper" and Bruce Metcalf's "Stabbed Moon, Scarred Ground and Knife Sky" were far into the sculptural and thus more demanding of the viewer.

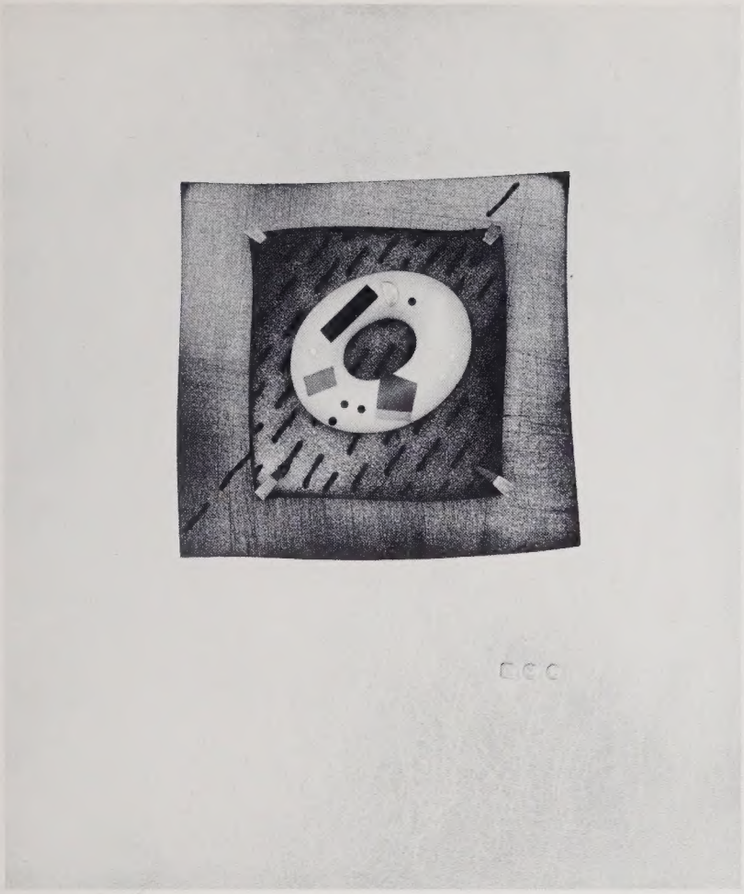
The reductionist, the abstractionist, the surrealist and the romantic were blended here to form images of private import. As with sculpture, one must bring to these works an educated and cultured eye. All objects displayed an intimacy of scale—objects for the home—while entering into the issue-oriented world of the contemporary artist. A battle ax and a Borgianesque stiletto in the age of lasers, weapons for mass annihilation and the space shuttle seem to be romantic pleas for a simpler, more direct encounter with the edge of life.

"Cutting Edge" is a further document that the tradition of expertise, technique and craftsmanship are still a sought-after goal. It also documents, as so many shows currently do, that the traditional lines of utility and art are being blurred. A wider esthetic and more open mode of expression is being entered. This show is small in the number of pieces but well rounded in diversity. There are many well-known knifemakers in the United States and many knife shows. I was glad to see that the knife was not the main focus of this show.

An exquisite full-color catalog, avail-



Top: Joel A. Schwartz, *Cheese Cutter,* steel, 20x2x11.5 cm **Center:** Lynda Ross, *Fish Knife,* mixed media, 16.5x1.6x3 cm **Above:** Robin Quigley, *Charm Bracelet,* silver and epoxy, 2½" diam., 1981



Top: Robin Quigley, *Wall Plaque with Green Oval,* epoxy, acrylic, pewter and iron, 7.6", 1978 **Above:** Robin Quigley, *Charm Necklace,* 14k gold, onyx, turquoise, coral and ivory 8" diam., 1980

able from the Kentucky Arts Commission, Frankfurt, KY 40601 for $6.00, allows the viewer to take "Cutting Edge" home. Bookings may be made through the Southern Arts Federation, Suite 712, 225 Peachtree St. NE, Atlanta, GA 30303 (phone 404-874-7244, Georgia Fletcher).

Robin Quigley's Contemporary Jewelry
Helen Drutt Gallery, Philadelphia, PA
April 30–May 30, 1981
by C. E. Licka

Within her miniaturized and intuitive langauge of forms, Robin Quigley has evolved one of the more interesting statements on abstractionism in current American jewelry. By creating a syntax in which the plastic arrangement of her poetic and spatial phrases evoke "small worlds," one is confronted with those reciprocal resonances that Gaston Bachelard, a French phenomenologist, discussed in his chapter on "Miniatures" in *The Poetics of Space:* ". . . sometimes the transactions between small and large multiply, have repercussions. Then, when a familiar image grows to the dimensions of the sky, one is suddenly struck by the impression that, correlatively, familiar objects become the miniatures of a world. Macrocosm and microcosm are correlated. . . ."[1]

A fascination with abstraction and a simultaneous consciousness of the details of the outside world places Quigley in the context of that age-old quest for the universal in the particular and the particular in the universal. She has freely derived her ideas from the world around her and synthesized those sensorial and emotional responses critical to her sensibility. For Quigley, the craftsman and the world are a highly sensitized feedback system through which intuitive reactions are channeled.

The genesis of her visual vocabulary manifested itself during her undergraduate and graduate years at Tyler and RISD (1971–1976). At that time, she focused on themes of travel, space, vehicles and roads. The images from this period were real, based on movements in space. This underlying concern for an object's motion in and through space appears to be one of the image-generative processes behind Quigley's later abstract Lilliputian environments.

Representational considerations were rapidly superseded by an increasingly abstract language of forms during 1976–1978. However, the concern for activities in space and on the ground were still linked to a horizon-line concept—a recurrent visual device in her present work. Some of these shapes float and tumble in space. At other times, these funambulist exercises are deprived of their zero-gravity conditions. Forms are then grounded or skewered in space as they orbit a bracelet such as *Bracelet* (epoxy and silver), or move across a planar surface, as in *Necklace* (acrylic beads, epoxy and silver).

Since abstraction necessitates a process of separating the intrinsic qualities or properties of something from the physical object or notion to which they inhere, Quigley has playfully simplified her forms to meet her need for a spontaneous and intuitive gestalt. It is important for her to retain a ". . . trace of emotional response. . . ." and to ". . . eliminate all the misleading words and cliché phrases used in speech. . . ." by maintaining ". . . only the basic essences. . . ." For example, in *Charm Bracelet* (silver and epoxy) or *Charm Necklace* (14K gold, onyx, coral and turquoise), the abstracted charm elements are part of an evolving and flexible grammar. One is given a primer of personal charms, mementos of accumulation gathered through time and related to ". . . what is closest to you. . . ." This "interior" processing of forms and symbols is similar in feeling to the early "Improvisations" and "romantic geometrics" of Kandinsky's Bauhaus years or the internalized notations of Miró and Klee.

"Notation" and "improvisation" are catalytic words that aid in clarifying Quigley's concern for spontaneity and immediacy and also underscore her interest in music, particularly jazz. Music with its nuances of pattern, rhythm and beat is capable of being envisioned and translated into a visual format according to Quigley and this results in ". . . notes becoming little forms, undulating shapes or visual notations to be set down. . . ." Thus, music provides another entry into her world of forms. The bracelets and necklaces operate like framing devices or instruments of expression by which the visual analogues to music can be orchestrated.

Her emphasis on materials such as acrylics and pewter also reinforce the idea of spontaneity and immediacy in her work. Since pewter and acrylic are closest to clay in their malleable properties, they accommodate rapid and expressive solutions to ideas that are in flux. This aspect of the medium's immediacy is something that eludes the traditional working of metal and permits one to move through ideas quickly. This disposition towards a material's base that elicits energetic and spontaneous feelings is closely aligned in concept to her visual diary-sketchbook that documents her work. These little sketchbook drawings are valued by Quigley for their unskilled and imperfect signatures. In other words, pewter, acrylics and drawing provide her with "process traces" of her unconscious and conscious activities.

Typical of this "trace effect of emotions" and her nonfunctional direction were the wall plaques exhibited at the *Schmuck International 1900–1980* in Vienna last year. According to Quigley, these wall plaques transcended function and became "art" once the idea became larger than its function. The *Wall Plaque with Green Oval* (epoxy, acrylic, pewter, iron nails) in this show is illustrative of her intuitive syntax in a nonfunctional format. In this piece one enters the center of a process in progress, a sort of frozen improvisation in which the oval and its inlaid forms hover over an imperfect square plane like a specimen pinned in a display case or magnified under a microscope. This square plane is covered with a series of diagonal hyphens that move across the entire surface. The first frame is then enveloped by a larger square frame with a single hyphenated diagonal line. Even the edges of the squares undulate in a wavelike motion subjecting the rigidity of metal to ductile forces as the varying textures and forms interact against the back plane.

The effect is striking. Movement and form dissipate into the distance of an

immeasurable space. One departs from the oval microbic world into the vastness of space and margins of the back plane. However, the vastness is an illusory emptiness. On closer scrutiny the surface of the back plane is worked with a plentitude of almost invisible convolutions. This resonance of forms is what Bachelard meant by the ". . . large issuing from the small. . . "[2]but not ". . . through the logical law of a dialectics of contraries but to a liberation from all obligations of dimensions. . . ."[3], or what Baudelaire said of Marc Baud's enamel paintings in the Salon of 1859 that ". . . he knows how to make a great gesture in a small space. . . ."[4]

P's + Q's: The Commercial Venture

The transition from making unique objects to commercial products can, in many ways, prove to be an esthetic disillusionment. In the case of Robin Quigley's and Janet Prip Birn's company, P's + Q's (Prip's and Quigley's), the results have been fruitful in terms of design concepts and functional jewelry.

The idea of producing commercial jewelry came to Quigley after her solo exhibition at Helen Drutt's Gallery in 1978. She began to feel that her work catered only to those patrons who could afford to purchase objects and jewelry that were fabricated out of precious materials. When she left her teaching position at Philadelphia College of Art in 1978, she merged with Janet Birn to establish P's + Q's. Birn, from Providence, Rhode Island where a great deal of commercial jewelry is manufactured, brought her knowledge about business and design to the operation. As soon as they set up shop and produced their first designs, they naively set out to find a market for their jewelry. Eventually they found a manufacturer to do quantity production, and they have pursued this direction for the past year-and-a-half.

At the outset, both Birn and Quigley experienced what might be called "esthetic withdrawal." They found that the more esoteric their work was the more limited was their audience. Circumscribed by the public's demand for something "less than esoteric," they adapted their ideas to the consumer market. Nevertheless, their jewelry still retains the essence of their initial concepts. For example, in the "Geometric" series, it is apparent that Quigley's prototype *Charm Necklace* is at work. The extension of her highly personal and intuitive ideas into the consumer market has not lost the energy and spontaneity that she feels is crucial to her jewelry. These corpulent "geometrics" are pregnant with the sense of the childlike and naive and are a logical elaboration of her drive towards an abstract language of forms.

Notes

1. Bachelard, Gaston. *The Poetics of Space*, trans. Jolas, Maria. Boston: Beacon Press, 1969, pp. 169–170
2. Bachelard, *op. cit.* pp. 154–155
3. *Ibid*
4. Baudelaire, Charles. *Art in Paris 1845–1862 Salons and Other Exhibitions*. trans. Mayne, Jonathan. New York: Phaidon Press, 1965, p. 188

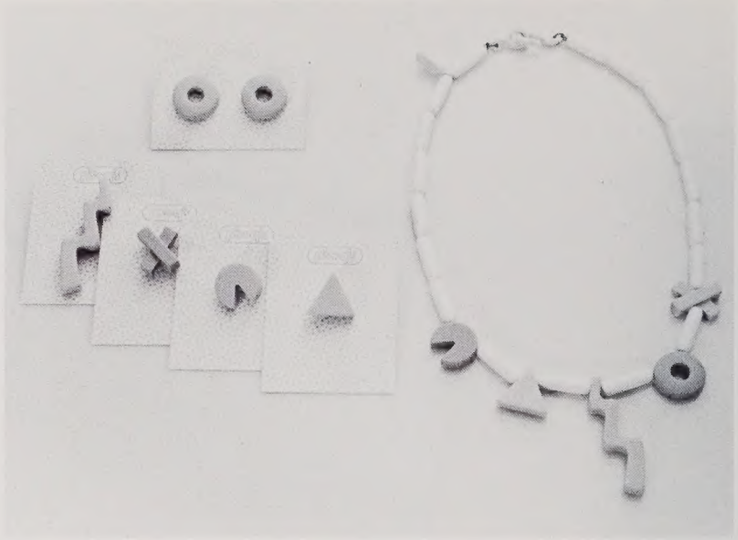
The Art of William Harper

Kennedy Galleries, New York City
June 2–July 3, 1981
by Antonia Schwed

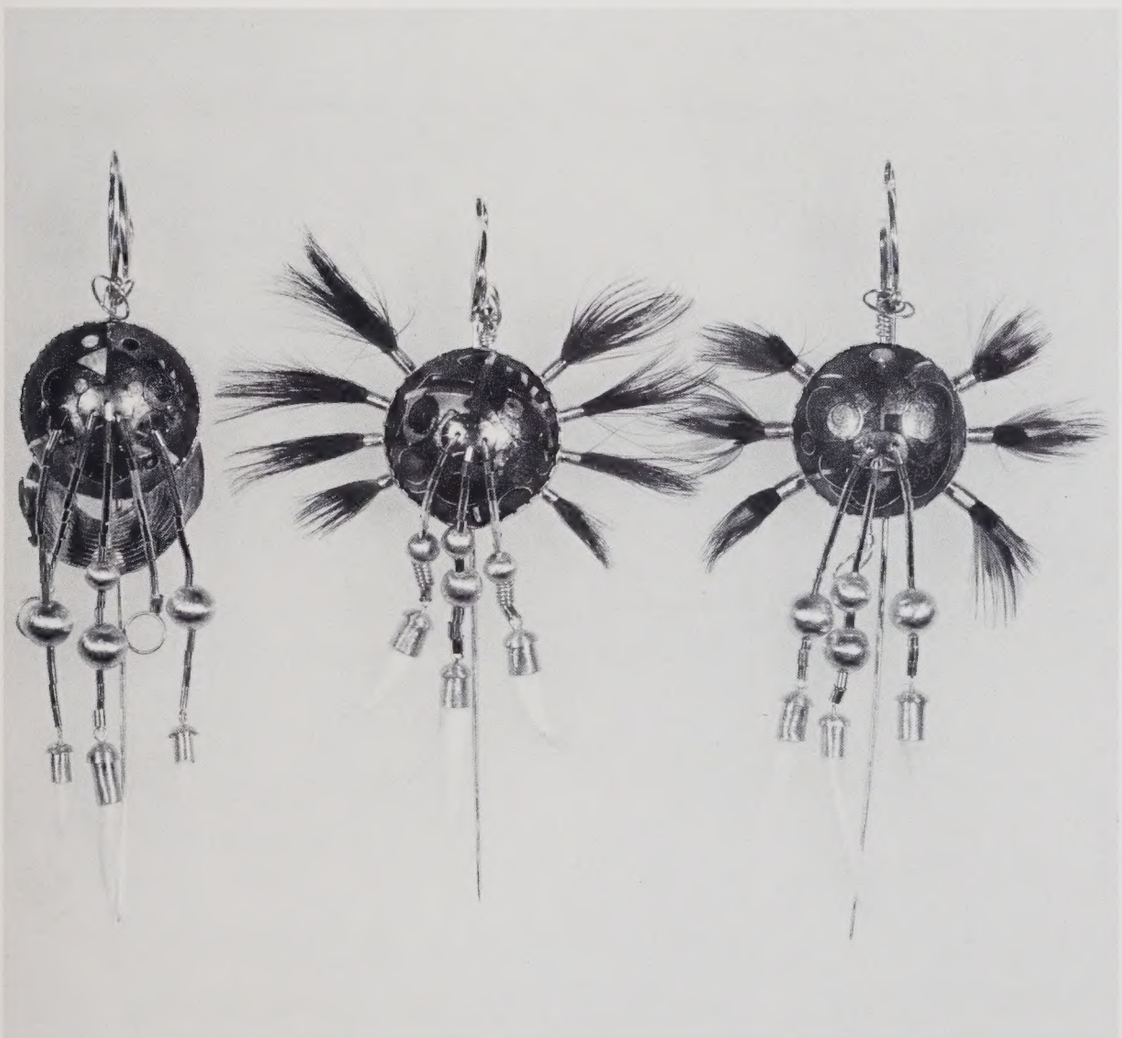
Surely all artistans—especially enamelists—will rejoice that William Harper's exciting enameled jewelry was on exhibit at the prestigious Kennedy Galleries in New York. All too often, as we craftsmen are wont to say, the only craftsman whom the exclusively "art" galleries and the museums will exhibit is a dead one. In other words, you've got to die, then you become an artist and then you make it, a discouraging thought. Well, in Harper's case he has made it through the snobbery still alive, and I am glad.

Congratulations then to the Kennedy Galleries for breaking out of the mold and displaying this unusual work. It is, of course, work of museum quality and merits the elegant kind of display that the Kennedy Galleries have given it. I have to report though, that the atmosphere of the gallery did come through to me as somewhat like that of a brokerage firm. It is a large, multiple-roomed place, up on the fifth floor of a big modern building. Its solemn quietness seems to ensure that no raggle-taggle gypsies off the street would ever enter there (if I ever have a solo exhibit I would *want* the raggle-taggle gypsies to come), because obviously such people could not be interested in investing. And I definitely got the impression from one of the representatives there that presenting Harper's works as investments was a very important aspect of the exhibit. Maybe the investment concept is a survival must for a gallery, but I believe that the ambience should be just as receptive for those who come merely to look and react emotionally, rather than financially. Perhaps the investment leit motif is only one part of the increasing money elitism in the art world (e.g., the Metropolitan Museum's outrageous suggested entry "donation" of $3.50—*that*'ll keep out the raggle-taggle folk), but it is a bit chilling. Does an artist really want his/her work to be bought for its future financial value? Is it not in a way wiser to buy something because you love it, it delights your eye, it tells you something, or you feel it is somehow a special amulet for you? You must have it; it doesn't matter a damn what it is made of; after all, a stamp collector is actually only buying paper!

William Harper has some 50 pieces of jewelry in his exhibit, mostly necklaces and brooches, and almost all basically artifacts in themselves. They are exotic, colorful pieces in which he has skillfully combined various enameling techniques (mostly cloisonné) with semiprecious stones, gold, silver, ivory and various found objects. The works are large, ornate, and make much use of cloisonné enameled beads and rounded bead forms, at which Harper is such a master. The colors are lovely and luminous with a wonderful strength and variety, some of this obtained by the judicious use of foil, and some, I imagine, by the technique of stoning back? Harper's metalwork is intricate, but it avoids fussy Victorianism. I would describe it as sophisticated-primitive, if I can use such a contradictory phrase. Incidentally, Harper does not concern himself with small imperfections in the enamel—a pit here, a spot there. To be a perfectionist almost seems to be an occupational hazard of the enam-



Top: Robin Quigley and Janet Birn, *P's + Q's Jewelry: Geometric Necklace*, 8" diam., *Geometric Earrings*, 1" diam., *Geometric Tache*, 1" diam., 1980 **Above:** William Harper, *Pagan Mamu 1—The Serpent* neckpiece, gold cloisonné enamel on fine silver and fine gold, 14k gold, sterling silver, snake rattle, pearl, snail shell; pendant: 6.8x17.8cm, 1979



Top: William Harper, *Perfumed Beads*, gold cloisonné enamel on fine silver, 14k gold, 52cm long, 1981 **Above:** William Harper, *Kabuki Boogie III—V* stickpins, gold cloisonné enamel on fine silver, 14k gold, sterling silver, glass, teeth, seed pearls, approx. 14x5cm each, 1980

elist. It can become a deadly obsession and I respect the artisan who can overcome it.

Harper's designs are abstract; to me some of them have the feel of Kandinsky's work after 1921, his "compositions," his "constructive abstractions." Or, occasionally, I felt myself thinking: is this primitive or is it R2D2? (especially in the case of one very large pendant that I enjoyed which is called *Pagan Mamu #1*. Is "Pagan Mamu" a fetish or a robot?) I also saw a fair amount of phallic symbolism in his design. And, finally, Harper appears to subscribe to the philosophy of taking an artistic concept and developing and extending it to the limits of its potential by means of a series. The delightful *Kabuki Boogie* stickpins form one such series.

Some high spots in the show for me were: *Pin #43. Gorey Kabuki:* A brilliant cloisonné bead necklace with a pendant hanging from it. The pendant has a matte black enamel background inset with cloisons, which in turn are filled with a beautiful mélange of transparents. Hanging alongside the pendant are two strands on each side with little sharp teeth as finials. *Necklace #42. Perfumed beads:* A richly colored cloisonné bead necklace. This piece seemed to me to have a medieval aura for a change. Jewelry for a De Medici, perhaps?

I believe Harper's previous body of work was not all jewelry. I take jewelry very seriously and I appreciate the fact that it is also a bread-and-butter activity for an artist, but I do hope that Harper will continue to go on with his enameling into other areas of deeper and more versatile form and expression. It would not seem right for him to let himself be boxed in completely by the demand for jewelry.

At any rate, this was an impressive and beautiful show, staged in a handsome setting, and I hope it portends a growth of serious recognition for the American artisan.

The Great Bronze Age of China
Kimbell Art Museum, Fort Worth, TX
December 10–February 18, 1981
(and traveling)
by Elizabeth Skidmore Sasser

"The Great Bronze Age of China," which opened at the Metropolitan Museum in New York in the summer of 1980 and which ended its tour in Boston in the fall of 1981, crisscrossed the country from coast to coast introducing throngs of incredulous and delighted Americans to the arts fostered in the formative stages of Chinese culture. The exhibit included 105 objects from the Shang, Zhou, Qin and Western Han Dynasties, a period of time extending from 1800 B.C. to 210 B.C., comparable to a span in western history roughly defined by the arrival of the horse in the Nile Valley and stretching to the creation of that Hellenistic masterpiece, the Nike of Samothrace. Although, it seems likely, the most spectacular encounter engaging the attention of visitors to the exhibition was a confrontation with terracotta warriors as tall as six-foot Texans, these ambassadors from the tomb army of Qin Shihuangdi, "the One and Only First," could not for long overshadow the awesome beauty and craftsmanship of the bronze vessels forming the major part of the Chinese treasures sent to the United States by the People's Republic of China. The

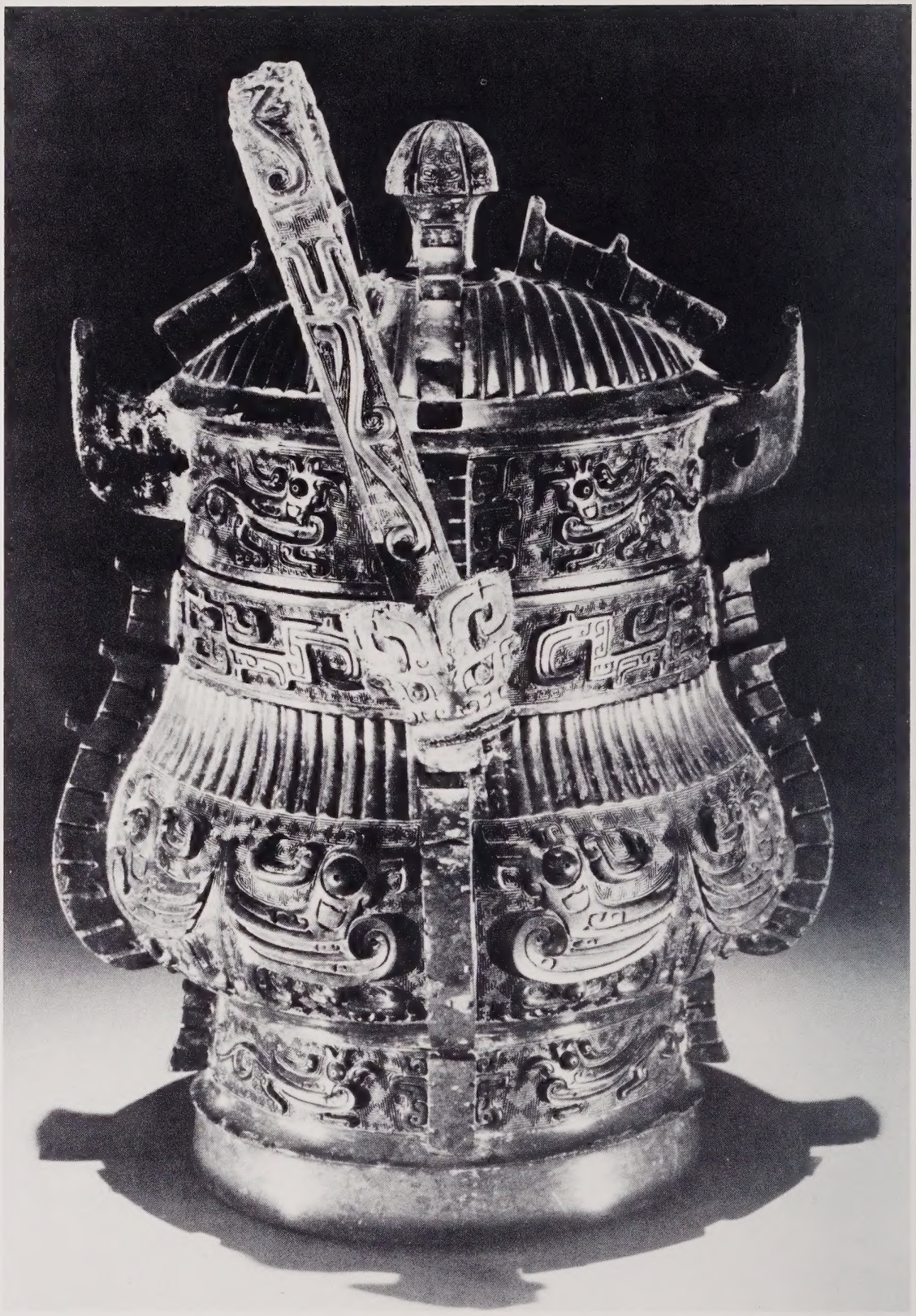
beautifully crafted Chinese vessels included examples of every type of container adapted to the purposes of wine drinking, cooking, storage and ritual cleansing. The scale ranged from a delicately proportioned wine cup *(jue)* cast in the 17th century B.C. to later pieces weighing several hundred pounds.

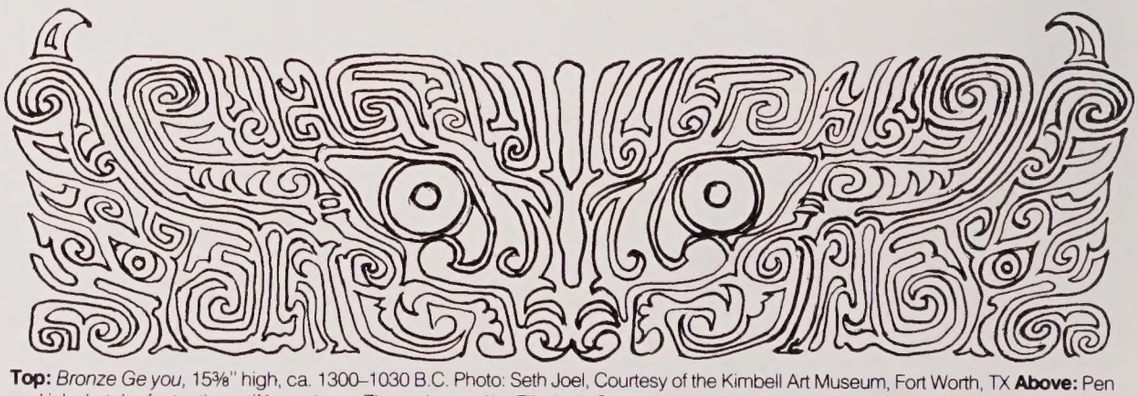
To attempt to date the beginnings of bronze casting in China, pushes time back to the Xia Dynasty, assigned by recently revised dating to the 21st century B.C. The enthusiasm of New China for unearthing its ancestral roots has begun to provide answers to many questions which have puzzled scholars for generations. Formerly, there was no satisfactory explanation for the sudden appearance of bronze pieces of the highest excellence, but with no evidence of antecedents or experimentation. Now, explorations of Erlitou Culture sites in Henan have disclosed in Erlitou III stratum traces of bronze slag and a number of bronze *jue,* three-legged cups with long handles and spouts for pouring wine. The seams found on these early vessels suggest that they were cast in piece molds, a fact futher substantiated by fragments of ceramic crucibles found beside them.[1]

A legend associated with the threshold of Chinese history and the reign of King Yu of Xia explains the importance attached to the bronze containers. The King, so the account goes, having subdued the great floods sweeping over his domain, had nine *ding* (food cauldrons with either three or four legs) cast to present to the nine provinces within his country. When Xia was supplanted by the Shang Dynasty, the nine *ding,* referred to as the "Auspicious Bronzes of State," passed into the hands of the new rulers as symbols of power and authority.

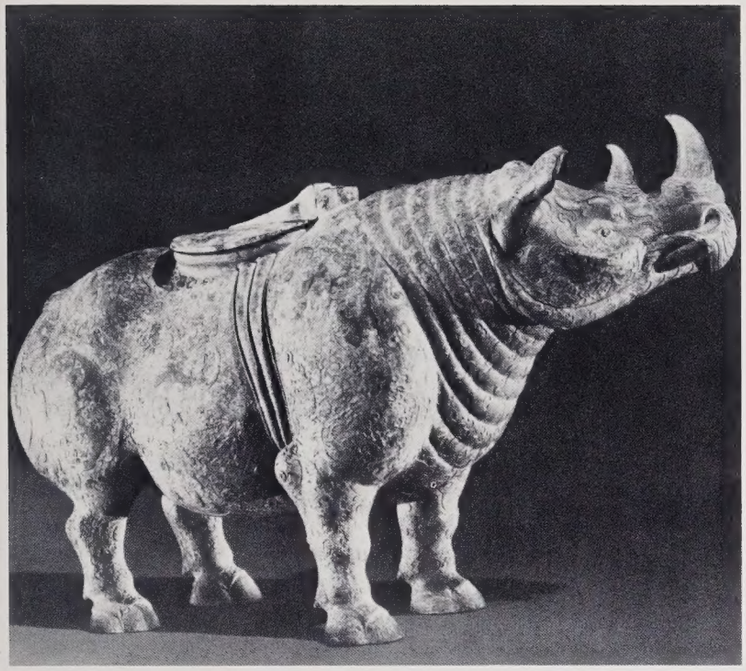
In addition to affirming hereditary rights, bronze vessels were also used for ancestral sacrifices and offerings of food and wine. An inscription, dated 722 B.C., from the Zhou Dynasty concludes with the phrase: "I, Sung . . . make precious sacrificial wine and food vessels for my august father, my respected paternal uncle, my august mother, my respected paternal aunt, thereby to show my filial piety and to solicit tranquility of heart, piety, pure blessing, a steady salary, and long life."[2] Sacrifices to the ancestors and to the deities were always an accompaniment to ceremonies surrounding the burial of the dead. Excavations of tombs have been a source for a rich yield of bronze artifacts; other bronzes hastily deposited in storage pits by royal families forced to flee a threatening enemy have also come to light.

A discovery, quite apart from the finds uncovered in pits and burials, has also made a major contribution to an understanding of the techniques employed in preparing the metal for bronze casting. In 1974, a remarkable event took place in Hubei Province at Tonglüshan; a mine, identified with the period of the Spring and Autumn Annals (c.722 B.C.), was located beneath a mountain top. There were a large number of vertical shafts leading down to the ore deposits; other tunnels moved out horizontally to follow the vein of the mineral. Evidence that the initial process of refining the metal was done on the site was attested to by slag which had wasted the entire side of the mountain (Ma Chengyuan,





Top: *Bronze Ge you,* 15⅜" high, ca. 1300–1030 B.C. Photo: Seth Joel, Courtesy of the Kimbell Art Museum, Fort Worth, TX **Above:** Pen and ink sketch of a *taotie* motif based on a Zhengzhou *gui* by Elizabeth Sasser



Top: *Rhinoceros zun,* cast bronze, 13⅜x22⅞", late third century, B.C. Photo: Seth Joel, Courtesy of the Kimbell Art Museum, Fort Worth, TX **Above:** *Gilt-bronze Lamp,* 18⅞" high, second century B.C. Photo: Wang Yugui, Courtesy of the Kimbell Art Museum, Fort Worth, TX

p. 11). Even though the refining activities seem to have occurred where the mining operations were situated, the actual bronze casting was assigned to numerous workshops away from the mines.

At the foundries, three basic methods were adopted for the casting of bronze: direct casting using temporary molds of sand; direct casting using piece molds; casting by means of the lost-wax methods, a procedure that did not develop until late in the Bronze Age and will not be included in this brief discussion of techniques.

The employment of temporary molds in sand in direct casting was reserved for flat objects, such as weapons and decorative plaques. A model of the object to be cast was made in clay, or carved of wood. One side of the finished model was pressed into loamy sand held in one half of the mold; then, the opposite side was indented in the other half. Inlets and outlets were channeled in the sand to allow the passage of the molten bronze into the mold and to permit the excess to escape; this done, the two parts of the mold were carefully bound together. The fiery metal was then poured into the mold until the liquid began to overflow. Willetts notes that the alloy used in casting contained copper and tin in the approximate proportions of 83 percent copper and 17 percent tin (Willetts, p. 121). When the bronze cooled, the mold was disassembled, the bronze stems filed away and the finished piece smoothed and polished.

Direct casting with piece molds was the method used for making ceremonial vessels. The basic shape of the container, including design elements which were to stand out in high relief, was modelled in clay of the finest quality. The divisions of the piece mold having been determined, each part received the impression of the designated portion of the model. Delicate details intended for the design surface were cut directly on the walls of the mold. Mortises and tenons were added to key the parts in place. When work on the section-mold was completed, the model was adapted to serve as the core of the cast. The outer face of the vessel was shaved away to control the thickness of the bronze needed to define the finished product. After the clay molds and the model were thoroughly dry, they were fired to produce durable ceramic forms to shape the molten bronze. As soon as the task of casting was completed and the metal given time to cool, the caster removed the outer mold and scraped away the inner matrix. Handles or decorative figures, cast separately, were often added to the bronzes, creating a complexity of design that challenges western perceptions.

The labyrinthian coils and meanders consuming the surfaces of Chinese vessels are subjects for admiration, controversy and a rousing diversity of scholarly opinion. The most important motifs, in addition to geometrical patterns, spirals and whorls, are the *taotie,* a monster mask, and the *k'uei,* a dragonlike invention. The *taotie* is dominated by two bulging eyes encased in a maze of anatomical suggestions identified as C-horns, arranged on either side of a central crest, the symmetrical doubling of a quilled tail (or body), curving fangs and claws. Disagreements arise over the origins of the zoomorphic images. Max Loehr adopts the purist concept that the masks evolved from "sheer design" and "cannot have any meaning—religious, cosmological, or mythological."[3] Those of like mind believe that artists gradually began to see strange creatures emerging in their tangled lines, just as pictorial information takes control of the mind of a person concentrating on Rorschach ink blots. An opposition point of view is held by Ma Chengyuan; he relates the *taotie* to primeval impulses inspired by the forces of nature which were represented visually by the hints of animals conventionalized in the masks (Ma Chengyuan, p. 8). The Chinese scholar also cites a story repeated in the *Zuo Xhuan* that gives a description of the famous nine *ding* of King Yu. The account states: "Anciently, when the Xia rulers were the inheritors of virtues, creatures of distant regions were depicted. The metals of the nine provinces were used to cast tripods with representations of these creatures on them. All the myriad creatures were represented to teach people about spirits and evil forces" (p. 10). In an analysis of style in Chinese art, William Watson also expresses a preference for the derivation of the *taotie* from stylized animal figures; he relates these to a storm or wind god.[4] Whatever its source, there is little doubt, that the symbolic face concentrates supernatural energies and raw power in its enormous eyes and tautly intertwined extremities.

The magical *k'uei* dragon is closely related to the *taotie.* Willetts believes it is conceivable that the *taotie* may have originated from two dragons displayed in profile, confronting each other eye to eye (Willetts, pp. 161–163). Thus, if taken together the twin beasts would dissolve into the frontal projection of the mask-monster. Shang bronzes are also a field for birds, snakes, cicadas and silkworms. Sometimes, almost unrecognizable, they exist in the writhing profusion of small geometric patterns and spiralling convolutions, termed *lei-wen,* that is, "thunder" motifs, a name adopted because of a resemblance to a Shang ideograph (Watson, p. 30).

A wine-bucket *(you)* from the Anyang Period (ca. 1300–1030 B.C.) illustrated the *lei-wen* design from which several varieties of birds stand out in precise relief. Simplified *taotie* decorate the knobs fastening the handle to the *you.* The formidable flanges jutting out from the bronze contours are regarded as an outgrowth of the seams resulting from the casting process and which were gradually transformed by craftsmen into striking design features. Discovered in 1970, the *you* had the remarkable distinction of serving for millenia as a repository for 320 pieces of jade and of protecting them in an unaltered state throughout their long burial.

The *you,* intended for ceremonial purposes, is 1000 years earlier than a late third century B.C. *zun,* a wine container in the shape of a rhinosceros. The purpose of the *zun* is emphasized by the tubular spout clenched between the jaws of the creature, like Churchill's famous cigar. On the rhinosceros's back a hinged lid opens to give access to the interior space. When the bronze was unearthed by a farmer's plow, the hollow was found to contain bronze tools and a bronze belt hook. Unlike the stylized birds on the Shang *you,* the rhinosceros with its rolls of

flesh and cumbersome stance has a porcine realism. The eyes glint with an inlay of black glass. Over the expansive body an intaglio pattern of cloud scrolls billows with a delicacy only a 20th-century Miss Piggy could affect with so much style. The cloud scallops were once inlaid with silver or gold which has long ago disappeared. During the Easten Zhou Period to which the *zun* belongs, the art of inlaying designs on bronze objects reached a state of technical and esthetic excellence. The first experiments with copper, silver and gold made use of narrow ribbons of metal packed tightly together in the indentations cast on the bronze surface of a vessel. The metal strips were flattened and fused by tapping, finally, the inlay was polished with a burnisher. This laborious practice was gradually replaced by cutting pieces from flat metal sheets to match the specifications of the design.

Han Dynasty artists developed an even less complicated method for producing richness and sheen on bronze. The technique of gilding flourished, beguiling the taste of worldly courtiers with the smooth and glistening contours. The art of covering bronze with gold powder in a binder of mercury is illustrated by the exquisitely crafted Han figure of a Serving Girl with a Lamp from the first half of the second century B.C. This bronze sculpture, conceived with an astonishing realism, was found in 1968 at the tomb of Lady Dou Wan in Mancheng, Hebei Province. The portrait, for surely it must be a likeness of a young serving women in the aristocratic household, was not art for art's sake, but a practical utensil. The girl holds a lamp in her left hand, while the full sleeve covering her right arm is draped over the top of the light. The planning is ingenious. A circular lamp base contains a pin for a candle at its center; the circle is rotated by a projecting handle. Two semicircular vertical walls are arranged to slide freely in order to increase or decrease the opening through which the flame of the candle sheds its glow. This device regulated the amount of brightness emitted and controlled the direction of the light. The hollow bronze body and the arm resting on the lamp trapped and collected the smoke, keeping soot from blackening the room. The lamp could be easily dismantled; the head and the arm of the figure were also removable to facilitate cleaning. The mechanical inventiveness of the lamp is matched only by the serene loveliness of the kneeling girl. This is one of the finest examples of early Chinese figurative art in existence.

The three examples of work in bronze which have been discussed indicate some of the changes that occurred in Chinese design beginning with the talismanic character of the Shang *you*, progressing to the increasing realism of the Zhou rhinosceros, and reaching a culmination in the Han sculpture of the servant with her lamp. The importance of bronze vessels (and a lamp is a vessel for containing light) to the Chinese is further reinforced by the fiftieth hexagram of the *I-Ching*, or *Book of Changes*, whose wisdom stemmed from the earliest practices of divination. The subject of the hexagram is the *Ding*, or Caldron. The Judgment states: "The Caldron. Supreme good fortune. The *Ding* serves in offering sacrifices to God . . . this brings inner enlightenment and true understanding of the world, and leads to good fortune and success. . . . In a period of advanced culture, it is of the greatest importance that one should achieve something significant."[5] These words composed long before Confucious or Lao-Tze seem especially appropriate in suggesting the new understanding of the arts of China arising from the splendid Bronze Age vessels and sculpture so generously loaned to the people of the United States by The People's Republic of China. The benign sentiments of the *I-Ching* should be extended to the Metropolitan Museum, New York City, for organizing the exhibition, to the Coca Cola Company, the National Endowment for the Humanities and Robert Wood, Jr., Charitable Trust for providing the grants which made the American visit of the "Chinese Age of Bronze" a reality.

Notes

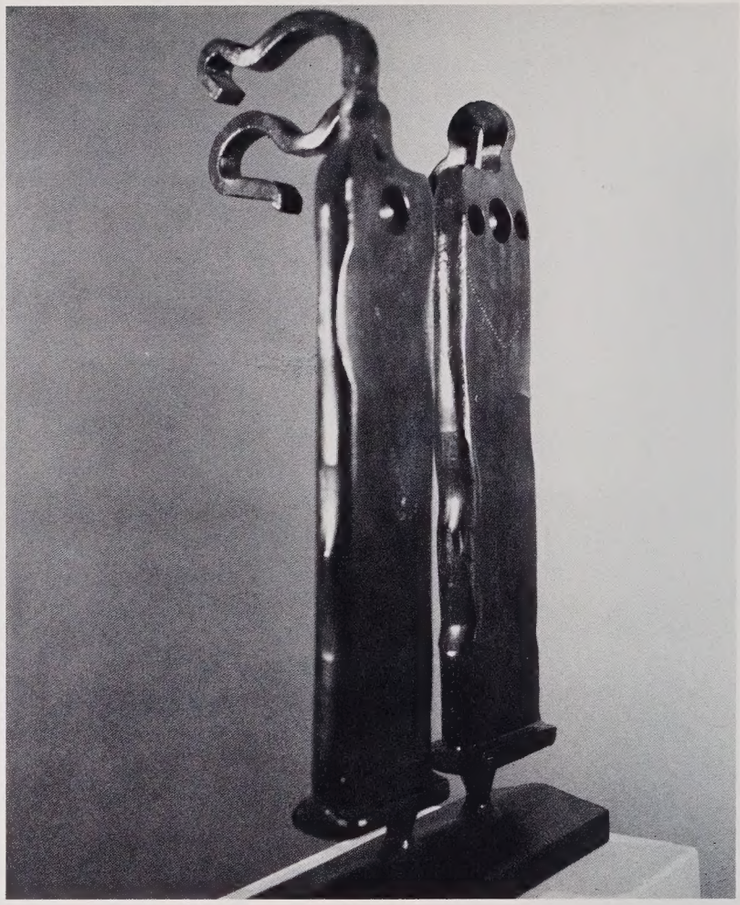
1. Ma Chenyuan, "The Splendor of Ancient Chinese Bronzes," in *The Great Bronze Age of China*, ed. Wen Fong (New York: Alfred A. Knopf, 1980), p. 3
2. William Willetts, *Chinese Art*, Vol. I (New York: Braziller, 1958), p. 125
3. Max Loehr, *Ritual Vessels of Bronze Age China* (New York: The Asian Society, 1968), p. 13
4. William Watson, *Style in Chinese Art* (Baltimore: Penguin Books, 1974), p. 27
5. *The I-Ching*, Vol. I, trans. Richard Wilhelm rendered in English by Cary F. Baynes (New York: Pantheon, 1950), pp. 205–207

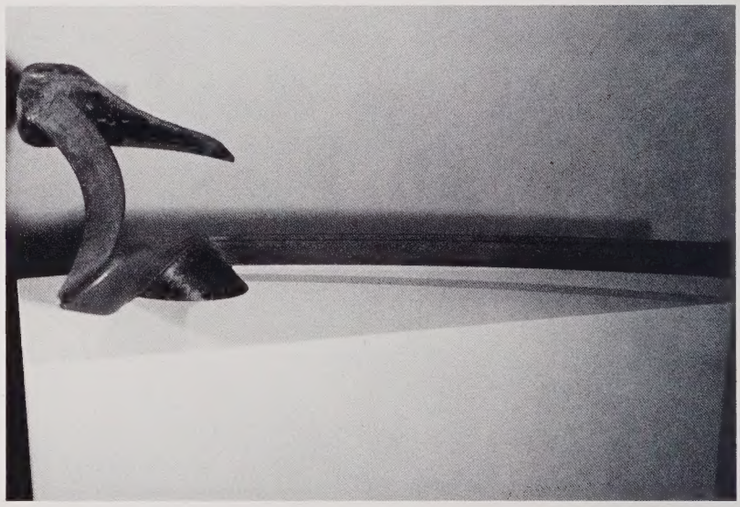
Confluences of Tradition and Change: Twenty-Four American Indian Artists

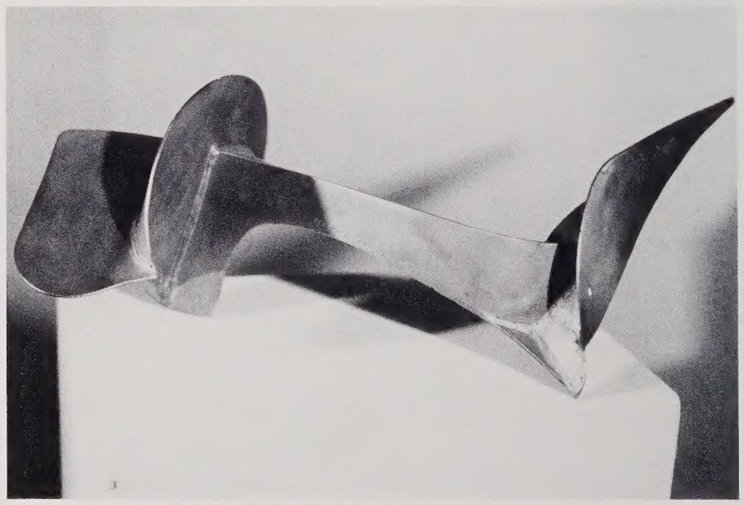
The Museum of the Southwest, Midland, TX
April 26–June 7, 1981 (and traveling)
by Elizabeth Skidmore Sasser

When an exhibition of the arts of Native Americans is announced, there is a tendency to expect a lavish array of crafts—basketry, weaving, pottery, beadwork, and jewelry. "Confluences of Tradition and Change" not only emphasized new subjects and styles in contemporary Indian painting, but presented examples of Indian sculpture removed by light years from standard clichés. If buffalo and totemic images carved in wood or stone were lodged in the viewer's mind, this visual misconception was quickly dispelled by a confrontation with technically excellent and conceptually stimulating sculpture in welded steel, polychromed steel and cast iron.

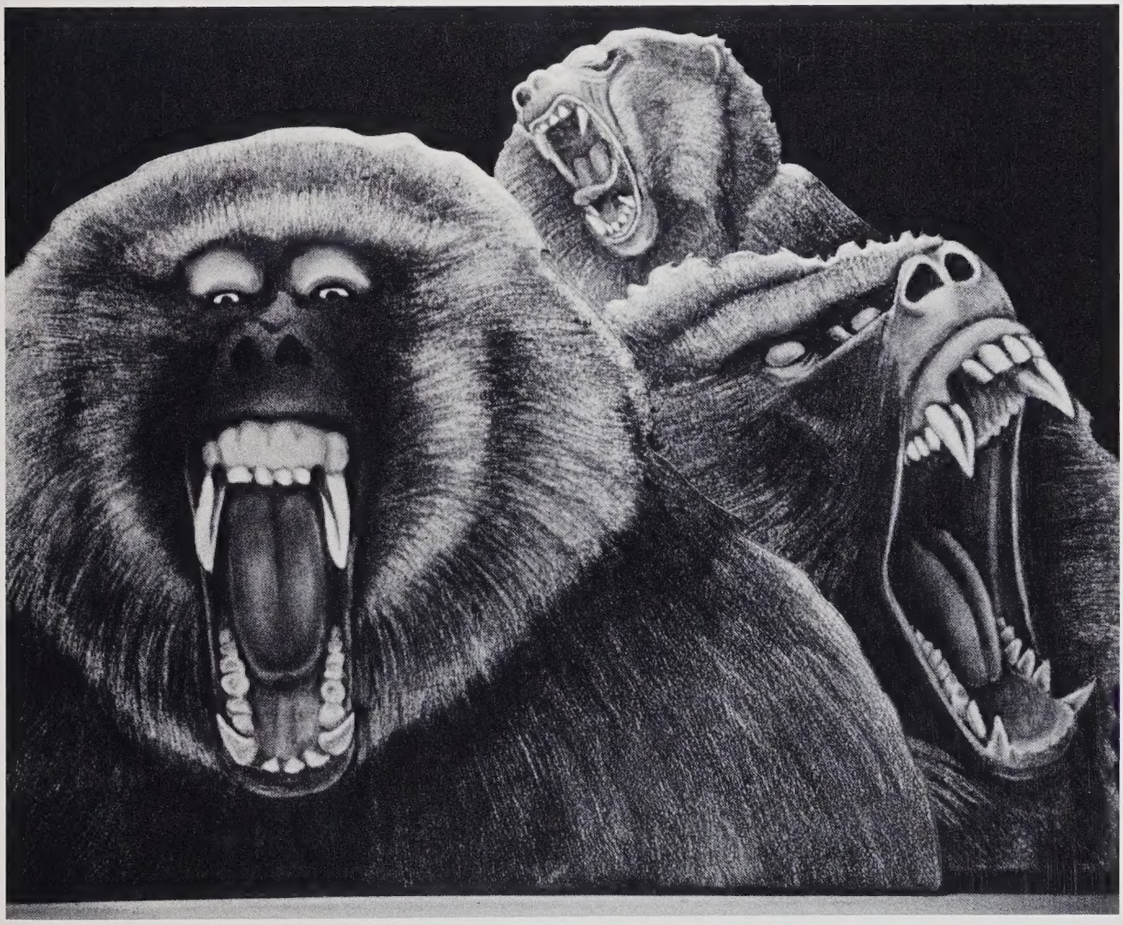
Two of the sculptors working in metals are Michael McCleve (Creek) who lives in Scottsdale, Arizona and Ted Sitting Crow Garner (Sioux) from Kansas City, Missouri. Traces of racial heritage are suggested in the pictographic symbols forged in McCleve's *Shaman's Dream*, a construction of multicolored steel and cast iron, welded and brazed. The sculptor's *Santa Fe Efficies* are reminders of the Supernaturals who silently wait until invited by the seasonal pueblo ceremonies to return to their people as the bearers of rain and fertility for the crops. Ted Sitting Crow Garner, a student of Mark di Suvero, builds powerful constructions of welded steel and







Top: Michael McCleve, *Santa Fe Effigies*, welded steel, chemically rusted and varnished, 32x16x12", 1977. Photo: George Longfish **Center:** Ted Garner, *Caukuluta*, welded steel, 11½x41x22", 1979. Photo: George Longfish **Above:** Ted Garner, *Spispiza*, welded stainless steel, 9x17½x11½", 1980. Photo: George Longfish



Top: Martha Banyas, *Chimera* wallpiece, enamel, copper, 7x7½x1", 1981. Photo: the artist **Above:** Martha Banyas, *Cacaphony* wallpiece, limoges enamel on copper, 7½x10x1", 1981. Photo: the artist

welded stainless steel which seem to be pure abstractions. On closer observation *Caukuluta* unwinds like the beaked head of a bird emerging from a heraldic motif found among Indians of the Northwest Coast. *Spispiza* resembles a taut animal force, energized by the lean steel parts. Garner speaks of the influences of his early childhood in Vancouver when he notes, "For a time Bill Reid, the great Haida artist, lived in our house. This was my first cognition of art, and the most formative. The tensioned curves and schematic transportions of Northwest Coast art remain central to my work."

The exhibition of contemporary Indian art was assembled by three highly qualified persons: Dr. Price Amerson, Professor of Art and Director of the Nelson Gallery at the University of California at Davis; Joan Hellen, anthropologist and Director of The Museum of the Southwest, Midland, Texas; Seneca/Tuscarora, George C. Longfish, a painter and Director of the C.N. Gorman Museum at Davis. A joint opening of the show occurred at the Nelson Gallery and the Gorman museum early in 1981. The paintings and scultures next traveled to Texas where they were displayed at The Museum of the Southwest before making the cross country trek for a New York showing. The "confluence" of Indian work has provided a rare oportunity for observing the vigorous upheaval of the arbitrary boundaries which have so often confined American Indian artists in the past. The expansion beyond traditionalism is experienced in a particularly potent manifestation by the unexpected impact produced by the fine sculptures in welded metal.

Martha Banyas
Greenwood Gallery, Washington, D.C.
April 2–30, 1981
by Sylvia Hamers

The seven enamels of Martha Banyas exhibited at the Greenwood Gallery showed her to have superb technical control over her medium. Her work delights the eye, with exquisite pastel shadings in her human figures and beautiful textures in the furs of her animals. She combines cloisonné and limoges techniques tastefully. Where she has given careful attention to the decoration and designs, they are unusually good. The startling juxtaposition of the real and the fanciful subject matter stimulates questions as to hidden meanings.

A question can legitimately be raised about her presentation of some of the pieces. Those with shaped metal or enamel frames are the least well integrated. In these, animals and people cutouts sit in front, on the edge and behind the frames against enameled backdrops. The idea is interesting, but in this show the central subject matter was better conceived than the frames and backdrops.

Much more successful were the pieces that were presented without frames as multileveled cutouts of animals, trees and people. But even here the extreme realism of the subjects was sometimes at odds with the exposed flatness of the copper shapes on which they were enameled.

Martha Banyas is an instructor in the arts at Mt. Hood Community College in Portland, Oregon. Her work has been included in many exhibitions, most recently in the "Animal Imagery

Show" at the Renwick Gallery in Washington.

Mary Ann Scherr/Sydney Jo Scherr: Wearable Artworks in Metal, Enamel
The Elements Gallery, New York, NY
May 5–June 6, 1981
by Deborah Aguado

Mary Ann Scherr's designs, directly scaled to the body, exemplify the simple stroke of boldly proportioned metal as object for body ornamentation. The strong, simple statement imbued with materials not traditionally used for jewelry, such as steel, has expanded this style in the past.

Perhaps in the effort to make her work more accessible, in this reviewer's opinion, Mary Ann Scherr may have bent over backwards a bit too far. By borrowing the proportions from her earlier, more substantial, work and transposing them into what seems to be this year's day-glo material, she has in fact minimized her previous successes and not added substantially to her repertoire. The pieces, mostly of titanium, light, hard and thought indestructible, are rendered temporary with impermanent color.

The exhibit included over 20 pieces of jewelry, such as neckpieces, wide-cuff bracelets and so on. Made almost exclusively of colored titanium, the majority of these pieces were bent ribbonlike forms. Although the colors varied, there was a predominance of blue, purple and pink, and the mat surfaces took on a slightly dusty look. The material and its potential for exotic coloration has decorative value. Unfortunately, here, Mary Ann Scherr tended for the most part to repeat familiar forms and simply rendered the pieces experiments in color.

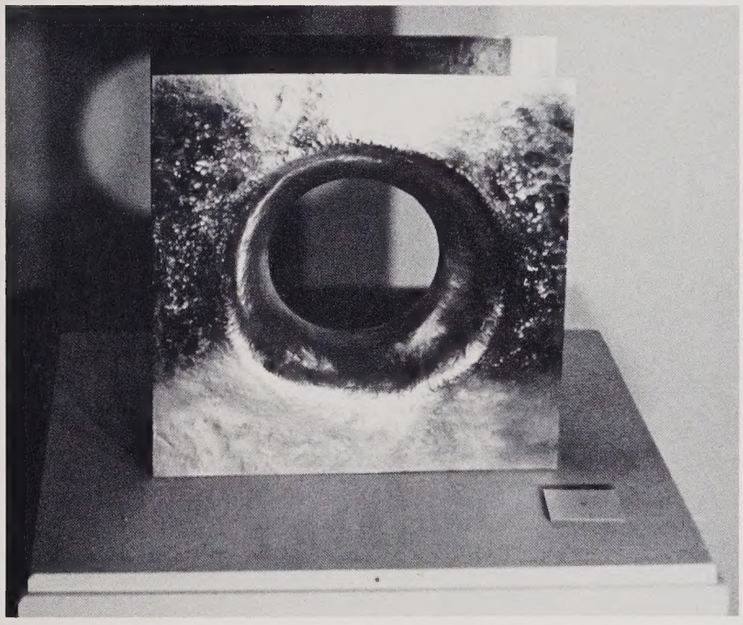
The major pieces of note were an oriental dragon belt or neckpiece and a neckpiece with a middle-eastern paisley motif, with semicircular pierced tabs pushed out for surface dimension. One cuff bracelet, colored blue, magenta and gold with a narrow band of etched gold-colored metal down the center, showed some direction for Ms. Scherr's continued experimentation in this material.

Sydney Scherr was showing her *Picture Window* pins in this joint exhibition. The pins were mostly silver with cloisonne enamel as a "base." Attached to these were window frames, fabricated in silver with watch crystals inset as window panes. The enamels were beautiful in coloration and technical competence. However, the addition of a glass surface and frame was confusing. Besides visually interrupting the appreciation of the enamel, a metaphorical question was raised: were these iconographic testimonies to reverie or simply depictions of past windowscapes?

Topographical Constructivism
Bannister Gallery,
Rhode Island College
March 26–April 14, 1981
by Tim McCreight

Curtis LaFollette is not the first metalsmith to have crossed over into sculpture, but few have crossed the line with such ease. The large Bannister Gallery of Rhode Island College was solidly filled with the 68 works that testify to the power of LaFollette's style. Just as the title *Topographical Constructivism* roused the brain, the objects simultaneously made both an intellectual and a visual appeal. Con-

Sydney Scherr, from the *Picture Window* series, pin, cloisonné enamel and sterling silver, less than 2x2"



Top: Mary Ann Scherr, *Dragon* necklace or belt, colored titanium, 1981 **Center:** Curtis LaFollette, *Hyperbolic Form,* raised copper, 12x12x14", 1981 **Above:** Curtis LaFollette, (left to right) *Cream Jug, Bud Vase, Teapot, Olive Oil Can*

structivism, as a period, refers to the efforts of several European sculptors in the 1920s and 30s to devise an alternative to organic, modeled forms. As an esthetic, constructivism is alive today, finding stability and statement in the mathematically ordered fabrication of planes and geometric units like cones, spheres and polygonal solids. LaFollette's *Topography* indicates the perception and attitude of an airborne observer, which provided a unifying theme for this exhibition.

The work easily divided itself into four categories: floor sculpture, wall pieces, functional holloware and concrete poetry. The functional work made use of die-formed elements for spouts and handles. In some cases, like *Olive Oil Pitcher* the vessel was just that—a spout and handle with no body—resulting in a sleek and unexpected configuration.

At the other end of the size spectrum were the floor sculptures. These were made of sterile, "modern" materials, like aluminum and plexiglass, and often showed a segment of a form whose mathematical (logical) completion may be surmised. Though the connection was not obvious, the pieces called up memories of the models we saw in chemistry class done up on a grander scale. The largest of these greeted a visitor entering the gallery. It was a parallelogram grid platform almost 10 feet square from which projected flaps in careful order, like so many robot arms snapped to attention. This same motif of a sheet caught in the act of becoming a grid was used in two other pieces: *Parallelogram I* and *Parallelogram II*. Fabricated in brass, these were beguilingly penned up in traditional black frames and hung on the wall. The sense of movement they conveyed, along with the tendency to change when viewed from different angles, made each piece dominate the space around it.

The strength of the show, I thought, came from these wall pieces which made up more than half the exhibition. They were square or rectangular framed assemblages whose modest size (many under two feet square) belay their power. Generally these took the form of grids made up of square sheets of copper or brass that had been given subtle, often slightly varying reliefs, in a press die. Through studied arrangement and careful use of patina, each piece made a statement that was visually rich while remaining concise and understated.

This was a show that sparkled. When I walked into the gallery my eye was caught by a thousand points of reflected light. But this was a glint not a glare, and in the same way the viewer sensed rather than felt overcome by the mathematical precision and machine esthetic that was lightly sprinkled throughout the show. I was struck by the unity I found in the whole enterprise. This was not the work of a sculptor discovering metal or a smith exploring sculpture, but the synthesis of concept, technique and intuition as handled by a mature artist.

Contemporary Metal
Yellowstone Art Center, Billings, MT
June 18–August 30, 1981
by Kate Wagle

"Contemporary Metal" was not only an exceptional metals exhibition, it was unquestionably a fine art exhibition. This doubly happy circumstance seemed due to conscientious adherence to selection criteria set forth by curator Richard Helzer in his catalog statement: "I have selected pieces for this show that contain a sense of idea and imagery as a primary motivation . . . the presentation of metal as an art medium . . . I am hopeful that the field of metalsmithing is finally mounting a serious challenge to contemporary art movements."

Within these parameters a wide range of techniques and materials were presented as jewelry, sculpture, drawing and combinations of all, from superbly wearable neckpieces to narrative and assemblage. Every object contributed to the variety and excitement of this show. Each artist was given the opportunity to show a small group of pieces so that various directions could be examined in depth. Although there isn't space in a single review to examine each contributor's work in the manner it deserves, a few of the works were outstanding examples of the diversity of the show.

Coffee Miklos's wallpiece *Moonlight* is a most appropriate sample of "the presentation of metal as an art medium." The imagery of this piece—a roomlike interior of dramatically flattened and distorted perspective fabricated on a substantial (18x18") scale—lay somewhere between reality and illusion, sculpture and drawing. Physically, Miklos's wallpieces are litanies of metal techniques (soldering, scoring, rollprinting, enameling, casting and more). Of the four pieces displayed here, *Moonlight*'s particular strength was an effortless use of all in a manner so appropriate the process became almost invisible.

Cowboy Lunchbox by Maury Cain transformed potentially mundane imagery through the use of an unusual material. The circumference of the standard-size lunchbox was covered with heavily textured deteriorating leather. A brass edge around the rectangular sides was secured with heavy screws, and the brass-framed windows of thick green glass were closely and deeply rippled to reveal the murky silhouette of a bucking bronco and rider. Somehow the glass transformed the object (visually suggesting aquariums, television, memory?) into a contemporary and compelling image.

True Stories by Robert McCall presented an array of images arranged on a raised, stagelike structure. This enigmatic small-scale tableaux was both humorous and intriguing. McCall has a nice feeling for his materials and his subject, and he communicates well on a personal level.

Another group of work in the exhibition was more identifiably jewelry. The best of it showed the same strong conceptual origin as the nonfunctional work. The brooch, a much used format, lent itself easily in the transfer of art from gallery wall to the body. Joseph Hall's brooches were remarkably elegant and wearable. *Light 5¢ Rotifer* was a finely tuned study of lyrical form and texture, anchored by precise mechanical elements. Shapes

of landscape, subtle balances of color, form and movement were all interpreted in various metals. Each material was exploited for its own qualities. Joseph Hall's metalwork is cool and sensitive and of the highest order.

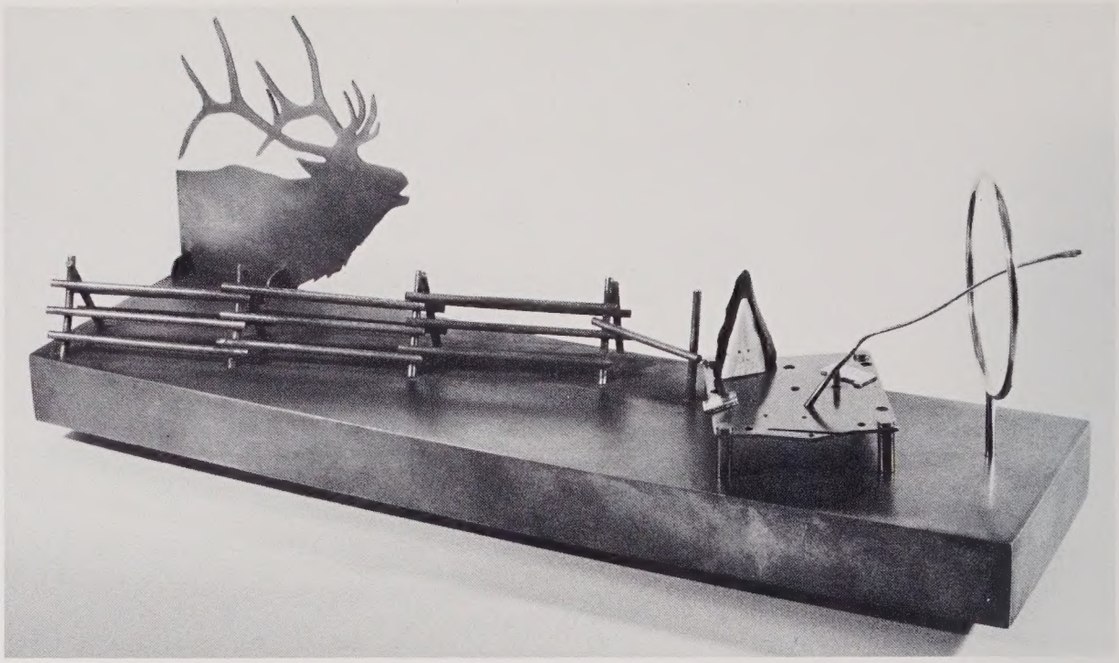
Another brooch that defied that description was *Primal Urge* by Lynda Ross. Fabricated of alligator skin, enamels, chipped pottery, opals, baroque pearls and one diamond (among other things), this reptilian pin was a conglomeration of engagingly naive imagery, comic with a slightly brutal edge. This highly personal jewelry was artfully clunky.

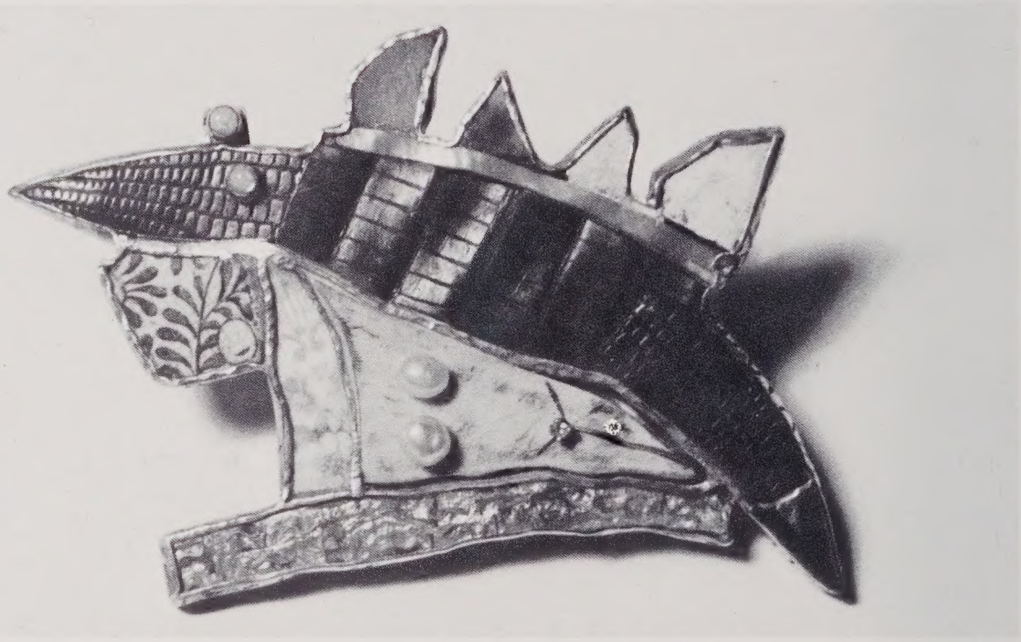
In view of the high quality of work exhibited at "Contemporary Metal," the installation, though excellent in general, did not entirely match the standard set by the work displayed. The hanging of Coffee Miklos's wall pieces, for example, was clumsy and confusing. Although used to advertise the showing, *Moonlight* was displayed on a blue-painted back wall, somewhat obscured by pedestals and cases. Further, it was grouped with another, similar piece, diminishing the impact of both. Also, despite Helzer's statement, a few pieces whose merits were more technical than conceptual did sneak by. In their defense, they were beautifully executed work, though their presence created some confusion with the issue the curator had chosen to address. Neither of these complaints are meant to diminish the overwhelming success of this show. One the whole, "Contemporary Metal" was a remarkable illustration of the possibilities open to artists who work with metals. Exhibitions of this caliber bring the field of metalsmithing closer than it has ever been to "mounting a serious challenge to contemporary art movements."

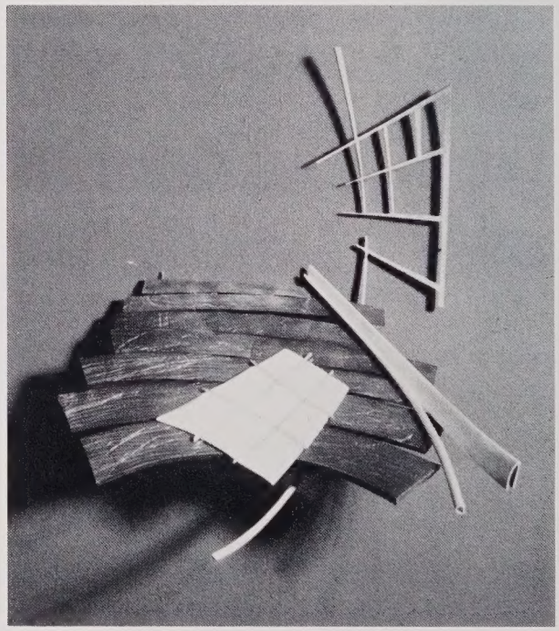
Scrap Metal
by Antonia Schwed
This column will appear from time to time with brief reviews of exhibitions and workshops in New York City and environs.

There is a kind of craft snob who seems to feel that all the best artisans and their crafts are somewhere tucked away in remote places and very rarely to be found in bad old New York City. The truth of the matter is that many of the finest artisans from all over migrate from remote places to live here, or if not, they send their work here for sale and for the prestige of exhibiting in the city. In other words, while our elitist searcher, in a Sherlock Holmes cap and with magnifying glass in hand, is combing the mountains of Vermont, it is more than likely that the very artisans sought for have packed up and moved to SoHo. Or at least they have packed up their best work and sent it there, or to Madison Avenue, or to the American Craft Museum.

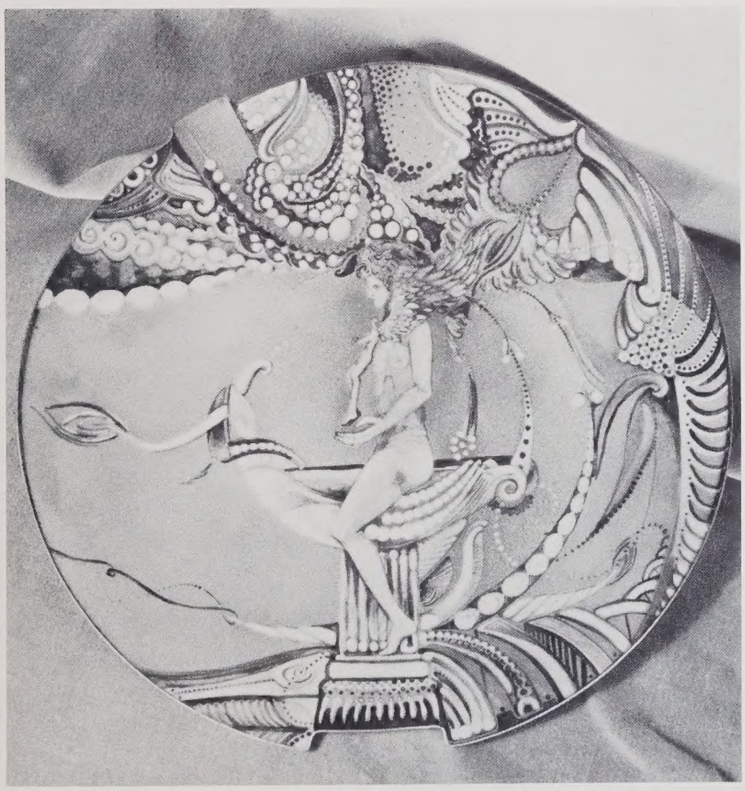
At this point I must slip in a word about New York City and New Yorkers in general. Just about everybody in the city comes from somewhere else. Long-established New Yorkers tend to be in the minority. They are a somewhat quiet breed who are apt to go sidling along doing their jobs and marveling at—*and* sponsoring—all the "out-of-town" talent and energy that keep the city humming. Because of this, I always get upset when recent arrivals from a distant state or country start making cracks about "New York-







Top: Robert McCall, *True Stories*, multimetals, slate, ivory, 14x6x6", 1981 **Center:** Lynda Ross, *Primal Urge*, mixed materials, 2½x4" **Above left:** Maury Cain, *Cowboy's Lunch Box*, bronze, copper, glass, brass, leather, 11x8x4" **Above right:** Coffee Miklos, *Moonlight*, copper, brass, mycarta, pewter, 13x14x6"



Top: Debra Fine Yohai, *Necklace,* cloisonné enamel **Above:** Harold B. Helwig, *Helding Held,* limoges enamel on copper, 25.1 cm max. diam.

ers." Scratch a New Yorker and you will find someone from Ohio or Oregon or California, to say nothing of Greece, the Middle East, China, Australia, Sri Lanka, you name it; therein lies our beauty and strength. Now how can one of these irate newcomers talk about the "typical New York cabbie?" Sure, you can perhaps talk about a typical London cab driver or a typical Tokyo cab driver, but *not* about a typical New York cab driver. In the last couple of weeks I've had a driver from California, one from Turkey, one from Korea and a delightful lady driver from Uruguay; it seems to me that there *is* no typical New York anything. So let's stop knocking New York; let's be proud of her the way the English are proud of London and the French of Paris. If you come to live in New York you become a new generation New Yorker whether you like it or not.

Well, now, back to business. And you will note that my preamble was not irrelevant. I'll tell of some of what I've seen in New York City in the past months, and it does indeed come from all over the country.

To top the list, a word about Bill Helwig's first solo exhibit in New York, at the Steven Zeitlin Gallery in SoHo. Helwig originally comes from Kansas and is now in Kentucky where he is the director of Vitrearc Enamels. To my mind, Bill Helwig has done and is continuously doing more for enamels than anyone else today. Apart from doing his own beautiful work, he has put his artist-scientist mind to the creating of fantastic new lead-free colors and to the development of all kinds of innovative enameling products, including a newly developed matte enamel (the matting process is within the enamel itself). He carries on an endless search for better, more versatile, more exciting aspects of the medium, a philosophy of benefit to every enamelist.

In this recent exhibit, Helwig showed a fairly large group of his recent museum-quality works; he did not feature the black-and-white grisaille at which he is also a master. Instead the show—mostly elegant plates in varying sizes, but by plates I mean for a medieval prince's castle—remains in my memory as a kaleidoscope of color, clear, beautiful colors covered with flowing limoges-grisaille-type paintings. There were images of sea designs underneath luminous colors, and engraved designs that caught the light and glinted like gold. There were subtle interweaving lines of underglazes, networks of rich oxides, all kinds of imaginative and successful techniques used to embody Helwig's artistic concepts. And there was a whole case of small plates with transparent red backgrounds—yes, the transparent red is *directly* on the copper. I would advise that any time you get a chance to see Helwig's work or hear his lecture, get there!

Now to Debra Fine Yohai of California, whose work was recently featured at the Kruger Gallery at 870 Madison Avenue. She excels at bold and brilliant cloisonné enamels, which she makes and sets in angular forms, combining them with semiprecious stones to make stunning necklaces. This angular design seems to be one of her fortes, and she does it with such skill that there is nothing awkward or uncomfortable about wearing the pieces. Yohai herself has an impressive background of study, including a session of mask carving in Bali. Some of her work can also be seen at the Spring Street Enamels Gallery in SoHo.

I took a somewhat timid peek at the Elements Gallery recently to see the Mary Ann and Sydney Scherr exhibit; it is reviewed elsewhere, so I'll just note in passing that I was quite subdued by the terrific technical skill and prolific production of these two energetic ladies. I slunk out (somehow I always seem to slink out of the Elements) and went home, where I sat and brooded for a while in my very small, chaotic studio. Although I wrestled with myself *not* to say anything aginst titanium, I must confess that no matter how skillful, most titanium work looks to me as if it should be hanging from a Christmas tree.

That bastion of enameling, the Spring Street Enamels Gallery, continues to show marvelous work in enamel and metal by artists from all over the country. There is the large, handsome, jigsaw technique work of Doretta Balk of Texas. Connie Brauer of Colorado has on display her lovely, gleaming opalescent enamel and opal jewelry. Lamis Feldman from Venezuela has created bowls that seemed to have an ancient ceramic quality and yet are true to the enamel medium. All in all, the Spring Street Enamels Gallery shows beautiful enamels combined with some superb metalwork.

Back in December I went to the Davis & Long Co. at 746 Madison Avenue where Robert M. Kulicke and Bessie Jamieson were showing their jewelry. The delicate, intricate craftsmanship was super; but the designs seemed somewhat lifeless to me.

In January the Craftsman's Gallery in Scarsdale held a show called "A Salute to Skidmore: Artists in Clay, Metal, Fiber." I particularly liked work by Carol Wilcox—very fine, complex metalwork with small cloisonné insets. I also enjoyed a large plate enameled with flux and wine red in an unusually interesting abstract design by Nicole Mawby. Ruth Johnston, of Tucson, was represented by handsome, massive pieces of jewelry that made dramatic use of copper. I'm always happy to see copper get some attention. And there was fine work by Glenda Arentzen, Arline Fisch and many others.

By the way, enamels made it to the 1981 Biennial Exhibit at the Whitney Museum of American Art. There was a large 12x12 feet opus by Jennifer Bartlett called "Sunrise, Sunset II, 1979." It consisted of enamel, silkscreen grid, baked enamel on steel plates and oil on canvas.

Martha Banyas, a splendid enamelist from Oregon who is doing so much for enamelists these days (making up a vast slide collection, lecturing, giving workshops and in general injecting enthusiasm and pride into enamelists everywhere) gave a great workshop at the Craft Students League of the YWCA. She was a vibrant teacher who generously shared all her techniques with the students and we had the chance to see slides of her own work.

Talking of workshops, Pamela McFarland from Tennessee has been giving weekend sessions in various enameling techniques at the J. P. Craft Studio in New York City. In case you didn't know, this studio is about 1½ years old now and is owned and run by Juan Pliego. Pliego is a master craftsman second to none. Those of us lucky enough to have seen his work have been awed by its beauty and his

fabulous skill. Incidentally, he himself gives courses in metalwork at his studio.

So, you see, any way you slice the Big Apple (a phrase incidentally that I heard rumored was invented by a public relations man from Hawaii), you reveal a glitter of talent from *all over*. And that *is* New York.

Porcelain and Enamels
Contemporary Artisans,
San Francisco, CA
June 30–August 1, 1981
by Laura K. Popenoe

Enamels, undropped, will last forever. One looks for a timeless quality of design and expression to match the eternal nature of the material. In this show of 40 invited professionals, there was much technical wizardry, but I missed the "perplexingness of beauty."

Although enamels present many technical challenges, here I want to praise those enamelists in this show who subordinated technique to expression. June Schwarcz showed several electroplated vessels and an oval wall panel. For well over two decades, the integrity, boldness and beauty of her work has set a high standard for enamelists. Her exciting juxtapositions of high-fired luminosities with rough-textured metal plating results in works of unique presence. If she were a painter rather than an enamelist, I feel she'd be as well-known as Georgia O'Keefe!

Dean Drahos showed luscious fumed surfaces, reminiscent of Tiffany's favrile glass in his wall-panels, bowls and three-panel table screen. The bowls of Michael Williams, another fumer of subtle loveliness, were gratifying for the special attention paid to the edges. Roger and Belle Kuhn, in their collaborative boxes, displayed their famous gorgeous colors and love of enamels in well-designed, well-crafted pieces. Tom Farrell's exquisite brooches were squarish shapes with washes of color over shimmering foil —both striking and wearable.

John and Merry Lee Howell showed several pieces—most notable was a large, multipieced neck ornament with a subtle and varied floral motif set with a diamond. The Howells have added soul to their technical perfection. Connie Brauer reached that "other dimension" in her opalescent cloisonné pieces, set with real opals. Kim Bass's love of watermelons was employed in her totally original necklace with enamels, gold and watermelon tourmalines.

Karen Bilgrai's designs for cloisonné pendants are well thought out, but she should find an alternative to rattail for the hanging part. Katherine Regier Gough showed a painterly and thoughtful use of color in her cloisonné jewelry. Pam Harlow, Marlene Byers and Helen Hosking all exhibited wall pieces of integrity, and Natalie Paul's innovative paintings with removable jewels were admirable.

More sensitivity needs to be shown in the lighting of enamels. Anyone who has seen the Ravenna mosaics in situ will know what I mean. Enamels, like mosaics, "come to light" when they are lit indirectly. However, Contemporary Artisans is to be congratulated for conceiving and mounting this extensive show. Another enamelist said, "This is about as good as an enamel show ever is." However, as enamelists transcend technique, one hopes for even more.

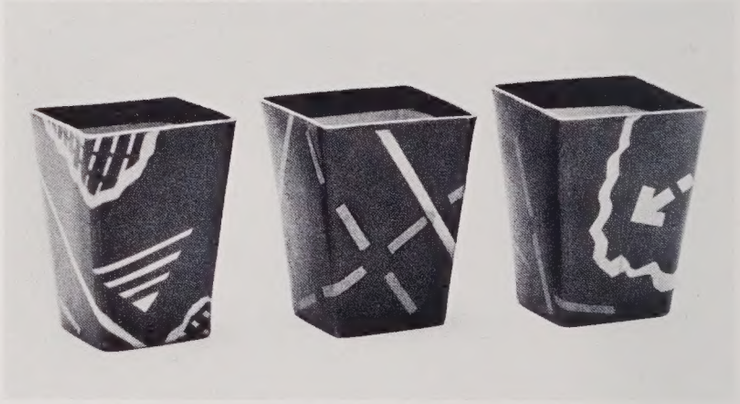
Statements in Sterling/81
Nelson Gallery/Atkins Museum,
Kansas City, MO
May 17–June 8, 1981 (and traveling)
by Teresa Callahan

There can be little doubt that the annual "Statements in Sterling" competition is beneficial for the participating students, the Sterling Silversmiths Guild, the represented institutions and the society we live in. The exhibition is important because it spotlights young artisans and encourages their potential. The competition was conceived in the interest of sparking that sometimes elusive necessity—originality. The 1981 "Statements in Sterling" seemed, however, more a showcase of fossilized techniques. The youthful vigor and celebratory, often rebellious stance of art-school-trained metalsmiths has vanished. There was little art and many, many emulative objects that smacked of the peculiar type of regionalism that our institutions breed. This is a regionalism that we not only don't accept, but we go to great lengths to deny!

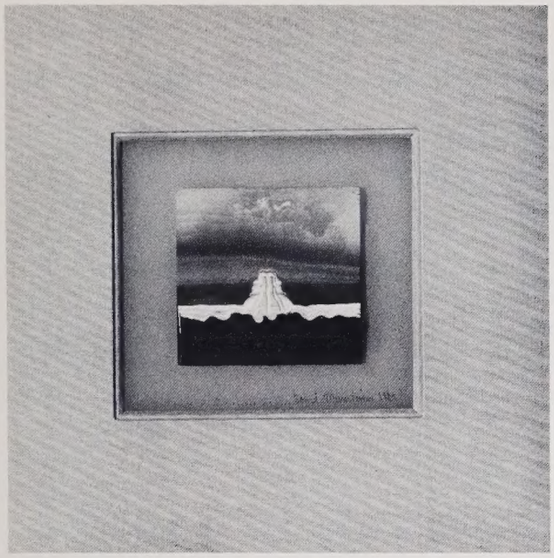
"Statements" is a student exposition, providing the audience with a glimpse of the tethers that are set up by the student-teacher relationship, the materials involved and the exhibition entrance requirements (sculptural, functional and/or nonwearable). Most of the work chosen was predominantly sterling, embracing the romantic, the conservative and the traditional. If there was a repetitive motif, it was the bowl form.

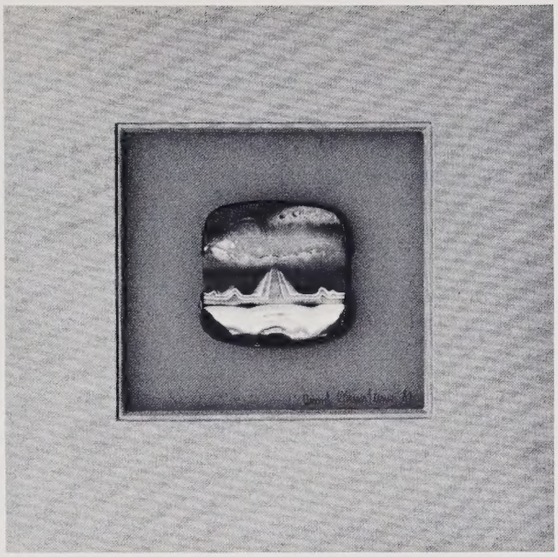
If one of the tenets of the show was innovation, how could the judges morally justify awarding the first prize of Wesley Harris of Cranbrook for *Chalice?* This vessel was executed in a thoroughly predictable format. Second prize went to Anne Owens-Stone of San Diego State for *Jester's Jigger,* a witty, charming piece with a sadistic form and just the proper amount of surface play. *Set of Three Liqueur Cups* by Gerhard Herbst, also of San Diego State, won third prize. This trio of squat cups, with tight graphics, was refreshing after one had been innundated with all the purist sterling bowl forms. Fourth prize went to *Daphne Bowl* by Daniel Fleckenstein of New Paltz, an overladen Baroque concoction. Fifth prize was taken by Linda Lemoine of California State at L.A. for *Detachable Pin Box*. This piece harbored a sense of preciousness, but also the rather tired theme of container-mystery, which was furthered by a labyrinthine graphic. Most of the honorable mentions were static—*Decorative Honey Container* by Thomas Ford of California State, Long Beach, looked like an F. B. Rogers Christmas edition. *Oil Lamps* by Alan Perry of Cranbrook were quite lyrical and bestial; paired with *Perfume Bottle* by Lin Stantionis of Indiana University they provided exceptions to the previous. There were also delights among the nonprizewinners, such as *Tea Pot* by Skip Gaynard, University of Washington.

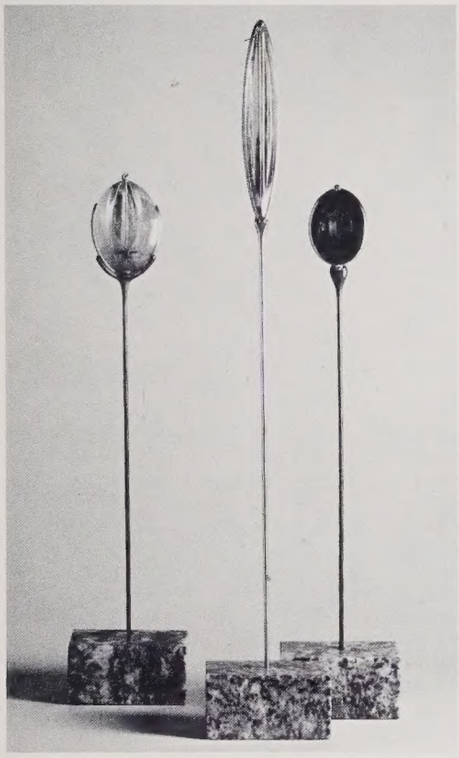
Because art is reactionary, we must keep in mind that the 1980s are highly charged in every aspect. We must no longer resist change within our field or within our lives. It is our responsibility to record our times, not to invoke the past. It is our duty to hone the inventive, reflective edge of the artist. Respect for tradition is acceptable, recession is not.

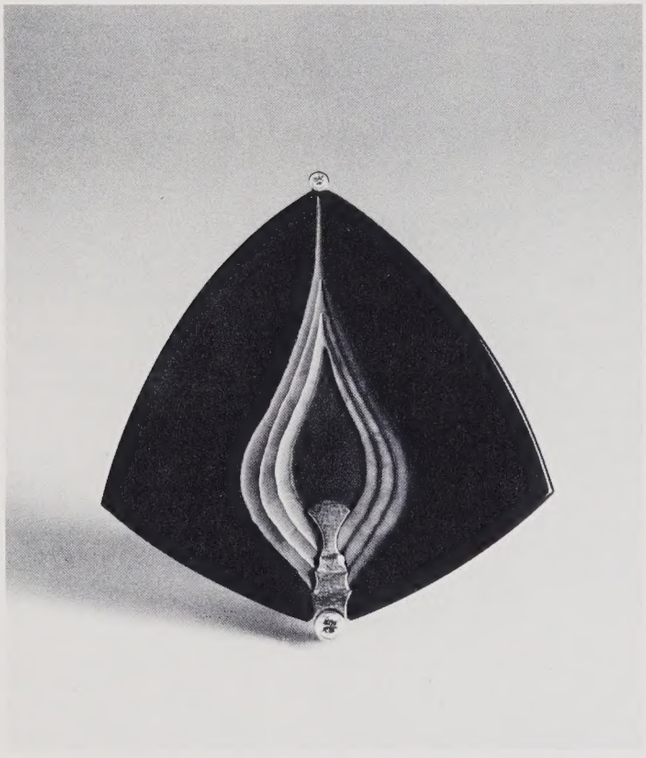


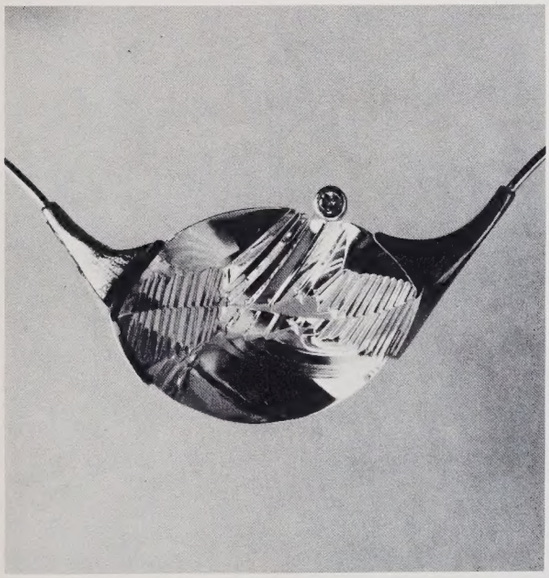
Top: Dean Drahos, *Iris,* vitreous enamel on copper, fumed, 12"d., 1981 **Center:** Gerhard Constantine Herbst, *Set of Three Liqueur Cups* **Above:** Thomas E. Ford, *Decorative Honey Container*

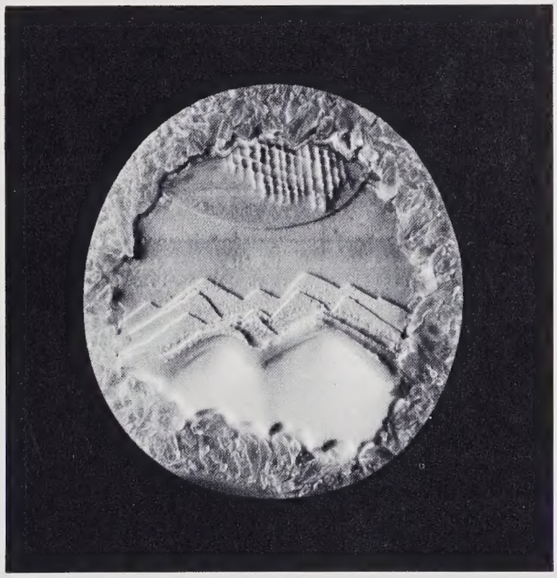












Top left: Bernd Munsteiner, *Agate Wall Relief* **Top right:** Bernd Munsteiner, *Agate Wall Relief* **Center left:** Bernd Munsteiner, *Brooch/Pendant Sculptures,* (left to right), amethyst/citrine gemstone, 18k gold, diamonds, sterling silver, quartz matrix and copper base; reticulated quartz, 18k gold, diamond, sterling silver, quartz matrix and copper base; reticulated quartz, 18k gold, diamonds, sterling silver, quartz matrix and copper base **Center right:** Bernd Munsteiner, *Onyx Relief Brooch/Pendant,* onyx, 18k gold, diamonds **Above left:** Bernd Munsteiner, *Neckpiece,* aquamarine, 18k white gold, diamond **Above right:** Bernd Munsteiner, *Agate Wall Relief*

Bernd Munsteiner
Contemporary Artisans,
San Francisco, CA
August 18–September 19, 1981
by Ann Grundler

Bernd Munsteiner of West Germany is primarily a stonecutter, but the German term *Gestalter* of gemstones and jewelry is more fitting. This show consists of 26 works. In the eight agate wall reliefs several layers of agate were carved out with carborundum, used as in sandblasting by masking off various areas in progressive stages. The translucent white in the recessed area was achieved with acid. The theme varies. Most reliefs in this show were landscapes, which totally integrated the natural qualities of the agate into the scene. Most of the wall reliefs were one-of-a-kind, but one of onyx with 18k gold and a .03 diamond, was number 38 from an edition of 100. Here the center could be removed from its backing and worn as a pendant.

The most stunning of the eight pieces of jewelry was a neckpiece with a large aquamarine suspended in white gold and a diamond as a focal point. An amethyst necklace had similar qualities. Two rings and two brooches were carved with carborundum, like the agate wall reliefs, with diamonds or sapphires on the outside of the stones integrated into the carved designs.

I was most impressed with the group of three elegant freestanding sculptures, all created in 1981, as were most pieces in the show. This is a new direction for Munsteiner. Two sculptures were reticulated quartz; the third was an amethyst/citrine found on a trip to Brazil this year, a new stone combination that had not be discovered previously. All stones were set in 18k gold with diamonds. They could be lifted from their sterling silver supports on a quartz matrix and copper base and worn as brooches or pendants. One sculpture group consisted of three palm-sized unmounted citrines. This allowed them to be touched as well as viewed.

Munsteiner cuts about 400 stones a year. Most are sold to other goldsmiths, including his brother Herbert. He employs both a goldsmith and a stonecutter in his studio, and does all of the stonecutting himself. The stonecutter does most of the finishing and polishing and the goldsmith most of the metalwork after drawings by Munsteiner, even though Bernd is a goldsmith himself. Some of the metalwork is cast; some is fabricated. Maybe 30 or 40 stones a year are fashioned into jewelry in the studio, and as many into sculptures or reliefs. Munsteiner shows throughout Europe and holds a biannual show in his own gallery in Stripshausen near Idar-Oberstein. The last one, held in November, 1980, was featured in the *Goldschmiede Zeitung* and in *Gold und Silber*. Besides his own work, he showed the work of five jewelers, a potter and a painter.

The American Craft Council Library: Information Center and Reference Service for Craftsmen

by Joanne Polster

"I'm calling from Atlanta." the soft voice drawls into the telephone. "My company is planning to give an award to one of its executives and we want to have a piece in silver designed and made for us by an American artist. Something appropriate. Can you suggest anyone?" "Is there any chance of your visiting our Library in New York to look at some slides?" I ask. His negative reply leads me to explain the problems of performing verbally an essentially visual task. Fortunately, a visual index composed of representative slides of craftsmen's work and a file arranged by media of craftsmen's names and addresses is at hand to help me make some connections. A few more questions clarify the caller's design ideas and needs. By flipping through the visual index and matching the cards to the names and addresses in the media file, I find five artists whose work may be suitable. It will be up to the client to contact them directly. Checking the dates on the media cards causes momentary alarm. Two of the artists have not sent any new material for their portfolios in the past three years. I keep my fingers crossed that they are still at the addresses on file.

As the day progresses, more calls come in: "Where can I study . . . ?", "When is the fair at . . . ?", "Where can I buy . . . ?", "How can I find out about copyright because . . . ?", "Do you know anything about the process called . . . ?" An art consultant, calling on behalf of a corporate client, is looking for an artist to execute a commission for a fiberwork to fill a large interior space. An appointment to consult the Portfolio Files is arranged.

Interspersed among the 20 to 30 calls the Library receives daily is the ubiquitous: "Can you tell me the address of . . . ?", or "This is a gallery calling, I have a list of craftsmen we are trying to get in touch with. Can you help us?" It is this continuous, almost desperate need to contact craftsmen that causes the greatest concern.

These inquiries are typical of the kinds of questions regularly addressed to the staff of the American Craft Council Library where over 5,000 requests for information by telephone, mail and in-person are answered annually. Located in the American Craft Museum building at 44 West 53rd Street in New York City, it is a unique resource of craft information on post-World War II craft and craftsmen—probably the only one of its kind in the country, if not the world. In its present form and location since 1973, the Library is open to ACC members during the week—Tuesday, Wednesday and Friday from 12 to 4:30, and, thanks to a 1981 grant from New York State Council on the Arts, to the general public on Saturdays and Sundays from 11 to 4:30.

Among those who regularly use our facilities are: gallery owners and exhibition curators looking for new artists, people planning to open new shops and galleries, buyers for department stores and craft shops, interior designers and art consultants seeking to commission major pieces. Magazine editors, freelance authors of books and articles and picture researchers often use our files both for initial research and for visual materials to illustrate their texts. Media people from video and television are beginning to find the path to our door. In addition, the files are used by the staff of ACC's *American Craft* and American Craft Museum.

The Library's collection contains over 3,500 books; 1,500 exhibition catalogs; clipping files which contain sections on professional practice, business management, health hazards and grant source information; suppliers' catalogs; school and craft course brochures; newsletters of craft organizations and national, regional and state arts councils; periodicals; the archives of the American Craft Council and American Craft Museum; the Photo-Archives of the American Craft Museum; and a Slide Study Collection.

The most important part of the Library's collection, however, is the Portfolio File System. Over 2,000 portfolios containing biographical and visual material (slides and photographs) of currently active craftsmen are arranged by media. To the data supplied by craftmen, we add clippings, xeroxes of articles, announcements and any material relevant to the artists on file that crosses our desk.

In addition to a master file of artists' names arranged in alphabetic order, there are three indexes that provide quick and easy access to the information in the Portfolio Files. First, there is the "media" file—with color-coded cards arranged first by media, then alphabetically by artist name within each media. Next, there is a file arranged by the geographic location of the artist's residence. Within each state category, the artists's color-coded cards are arranged by media. Finally, there is the visual index or Aperture Card System. For this file, we use a standard rotary, "Rolodex," file. Rolodex file cards have been specially die-cut with an opening to accommodate a 35mm slide. We select or ask the artist to select a slide representative of his work. This slide is removed from its cardboard mount and affixed in the card's aperture. The artist's name and a description of this piece is typed on the card. When the Rolodex is placed on a light table, the illumination through the transparencies is more than adequate for the viewer. This handy device permits the user to scan through a large number of slides very quickly. Again, the cards are arranged by media.

The Portfolio Files, located within arm's reach of the work tables contain additional visual and biographical information about the craftmen selected through this preliminary search. Periodically, older material is culled from the Portfolios and placed in adjacent archival files.

Inclusion in the Portfolio Files is by review. Three times each year, the Review Committee, a rotating group, meets to look through the slides submitted by applicants. New portfolios are opened for those selected by the committee. In addition to those applicants who send slides directly to the Library, some craftsmen are invited to submit applications at the suggestion of ACC staff, curators, teachers, gallery/shop owners and other craftsmen. An interesting article or exhibition catalog will also prompt us to send out applications. Application to the files is open—anyone may apply for review. A craftsman need not be an ACC member in order to submit slides for consideration.

At one time, the Library had three staff members, one of whom was solely responsible for the service and maintenance of the Portfolio Files. With budget cutbacks, however, this position was eliminated and the staff reduced to one full-time professional and a part-time assistant working two days a week. The Portfolio Files are now fully in the charge of the part-time assistant.

In spite of the staff shortage, we have been able to maintain a fairly good level of service on the Portfolio Files. There are, however, certain routines that we are unable to perform with any degree of regularity. For example, we can no longer send out an annual update request to all craftsmen on file. We now must rely on the craftsman to let us know of address changes and to send in new slides and resumes from time to time.

We are well aware of the problems engendered by this cut in procedure. Not long ago, a new craft shop owner sent out letters to metalsmiths and jewelers who, he felt, might be interested in supplying his shop. Of the 40 invitations sent out, 20 were returned as "addressee unknown." Checking through the metal media file we found that of the more than 300 metalsmiths on file, over 150 had not updated their files or been in touch with us in any way since 1979. The Portfolio Files provide an important link between craftsmen and the consumer. It is important that this connection be maintained for everyone's benefit.

There is no doubt that people who visit the Library are impressed by its scope and organization. Professional in its approach, it has been designed with the user in mind. Not only is it a "working" facility but it also serves as a model for other prospective craft information centers. In the past year, we have been visited by administrators of several American craft organizations as well as by representatives of foreign craft councils who want to establish or improve their own reference facilities. Although located in New York City, the ACC Library serves a national and international constituency through its telephone reference, correspondence and one-to-one interactions.

Any craftsman interested in applying for the Portfolio File review should write to Joanne Polster at the ACC Library, 44 West 53rd Street, New York, NY 10019. Those metalsmiths currently on file, who have not done so in the past year, are urged to send new slides and an updated resume to Joanne at the above address.

Joanne Polster is head of the ACC Library

American Craft Council Library light tables for viewing slides and Rolodex indexes of craftsmen

Questions& Answers

by Linda Weiss

Q: While attending a recent workshop on the electro-coloration of titanium, participants were warned by the instructor of the "shocking" possibilities from the rectifier unit. Since the unit is only pulling 110 volts, why worry so much—110 volts can't kill anyone, can it?

A: Not being very familiar with titanium processes or electrical theory, I contacted Edward DeLarge who, in turn, referred me to Mr. Gil Jemmot. Mr. Jemmot is an Associate Development Engineer III at the Center for Astrophysics and Space Sciences at the University of California San Diego. His wife, Deborah, has recently completed her Masters in Metalsmithing at San Diego State University. Mr. Jemmot's answer follows: Is it safe to work with 110 volts? Yes it is, if handled properly. On the other hand, there are thousands of people per year that die from a 110-volt electric shock. How low a voltage is safe? It all depends. The first person killed with man-made electricity had only six volts available. This is not intended to make you fear flashlight and car batteries (that unfortunate experimenter had to really try; he was sitting in a bath of electrolyte), but rather to give a healthy respect for electricity and the urge to handle it safely. In our labs we routinely handle 30,000 volts and we haven't lost a person yet. 110 volts *can* be safe *if* handled properly.

When is electricity dangerous? To answer this we have to backtrack a little. There are two common measures of electricity: voltage and current. Voltage is like pressure. It measures how hard the electricity wants to get from one place to another. Current, measured in amps, indicates how much electricity is going between two points. These two are tied together by resistance (measured in ohms) which measures how hard it is to get the current to go from one place to another. If you keep the voltage the same and cut the resistance in half you get twice the current (amps). Less resistance means more flow. Sound reasonable? If the resistance doesn't change you can get more amps by turning the volts up. For those who like this type of stuff, the equation is called Ohm's law (nothing to do with a traffic violation) and looks like:

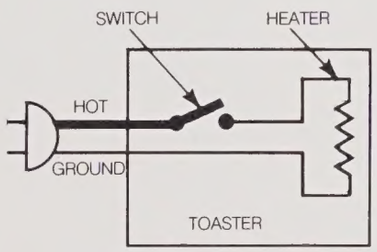
$$I = \frac{V}{R}$$

$$\text{Amount of Current (amps)} = \frac{\text{Force (volts)}}{\text{Resistance (ohms)}}$$

For instance, if you have 110 volts across 110 ohms your current will be 110/11 = 1 amp. These are typical values for a home light bulb. Most anodizing or titanium coloring power supplies are capable of much more.

Now for the suprise. It isn't the volts that kill you, it's the amps. How many amps you ask? I'm afraid the answer is sexist. An average woman would be killed by only ⅔ of the electric current which would kill an average man. It only takes 1/50 of an amp (about 1/600 of the current in a hair dryer) to stop your breathing, and that is for men. Women only take about .012 amp. Muscles are controlled by the electricity transmitted by the nerves attached to them. If you supply a current from another source you can overpower these signals and cause the muscles to contract. That is why the frog legs jump in junior high science class when hooked up to a battery. This 1/50 amp mentioned earlier turns out to be enough electricity to confuse the muscles of the human chest and make them all tighten up. No chest muscle control means no breathing, and if you keep it up too long, no you. That's what it takes to kill you slowly. To stop the heart directly it takes more, but still only around 1/10 amp. More precisely, one out of 200 healthy adult males would have their hearts stopped at .116 amp. If you are female, old, a child or in poor health, your odds are worse. If you have a pacemaker, forget it.

So much for the gloom and doom part. The good news is that it isn't all that hard to be safe. The secret is keeping your body from being part of an electric circuit. The electrical term "circuit" comes from the same latin word (circum) as circle and is used because electricity can only flow in a circle (disregard static electicity). If there is a break anywhere in the circle the whole flow is stopped. Resistance in any part of a simple circuit cuts the flow through the whole circuit. In a typical electrical appliance, the switch only breaks the circuit at one place. With a two-prong wall plug the switch can be in either the "hot" side or the "ground" side of the circuit and will work equally well in either. The safety problem comes when the switch is in the ground side. The appliance is then hot even with the switch open (off). That is how you get shocked with a toaster or lamp that is turned off. If you unplug the appliance, you can be sure it is off, otherwise it is a 50-50 gamble (depending on which way the cord is plugged in).



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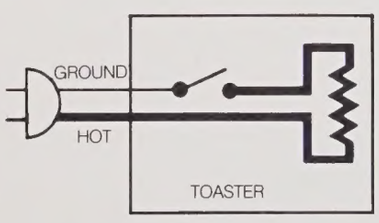

UNSAFE

WHICH WAY IS YOURS PLUGGED IN?

You may wonder if the ground wire is turned off, how could you get shocked? The answer is that the actual earth (the British use this word to also mean electrical ground) and anything connected to it (pipes, concrete, metal tables, you, etc.) can be part of the circuit that returns the electricity to the power plant. That is where the term ground comes from. The world acts just like a wire carrying electricity back to the source of power. The generators are hooked up this way for safety reasons, but I don't want to go into why. It introduces some danger to the uncautious but it is safer overall.

Back to reality. How does all this help in the studio? The answer is to keep from being part of an electric circuit between something electrically hot and something electrically grounded. To avoid touching something hot:

1) Wear good rubber gloves. If you color titanium with the brush method rather than the bulk tank method you are breaking all of the other rules, and this is about the only one you have going for you.
2) Don't touch the wires, baths, tanks, workpiece, etc. while the electricity is flowing.
3) Unplug the power supply before making connections, adjusting the bath, etc. Remember the toaster? These power supplies and variacs can shock you for the same reason, even when turned down or off (if you don't have an isolation transformer).
4) Don't work on a metal table, or with metal tanks. If both you and the wires touch the metal, you might as well grab the wire directly.
5) Keep your work area neat. As in 4, if you and the power supply are connected to each other through spilled water, bits of metal, unused wires or other things that can build up in a work area you can get shocked just as well.

If you do come into contact with a live wire or workpiece, or whatever, you are not dead yet. Remember, a circuit is needed for current flow. If you can avoid making a ground connection you are OK. The following are general safety rules and should be followed, but should be treated only as a safety net in case a mistake is made. Don't get sloppy with the first set. These suggestions are *vital* for anyone working directly with the electricity such as in the brush method of coloring titanium, as there will assuredly be slipups if you do it for any length of time:

1) Wear rubber-sole shoes. They make good insulators.
2) A wooden or plastic chair or stool is a good idea.
3) A metal floor is the worst. Cement is almost as bad, especially if damp. If you have a choice, work over a wooden floor.
4) Keep dry. Wet skin (or cloth) makes a better conductor.
5) Stay clear of pipes, conduits, metal flashing, metal vents, etc. They can provide a "good" ground.
6) In schools or other areas where untrained people might have access to the equipment, or if you are brush coloring titanium, install isolation transformers and/or ground fault isolators. Talk to an electrician about these. A variac is *not* an isolation transformer.
7) If you feel a tingle from the equipment (or the drill, radio or toaster) find out why! Consider it a free warning. Just because it hasn't bit you hard yet doesn't mean it won't. You have just been lucky and had some resistance in your circuit so far.

Electricity is like many tools metalsmiths work with, safe if you choose to make it that way. Although this was written in response to a question about titanium coloring, it applies just as well to plating, anodizing, electroforming, electropolishing and the use of power tools and appliances in general. Please don't make metalsmiths an endangered species.

Retipping Prongs

by Tom Arnold

Techniques of jewelry repair will appear from time to time in Metalsmith.

Tom Arnold, a jeweler with 20-odd years experience at the bench, was until recently a writer for American Horologist and Jeweler. *We welcome questions from readers on jewelry repair problems for this column. Please address them to Tom Arnold, c/o Metalsmith, 35 West 84th Street, New York, NY 10024.*

A diamond may be forever, but prongs certainly are not. With today's gold prices, retipping is an attractive alternative to new prongs or a new setting, and it is definitely a common need among your customers.

You may retip any mounting. If the stone will not take heat, you must first remove it and then reset it after you have retipped the worn prongs. You must also remove any other stones in the piece which will not take heat. Some stones which will not take heat are: *opaque stones,* such as diopside (black star), opal, lapis lazuli, turquoise, malachite, sodalite, tigereye, pearl, onyx, star ruby, star sapphire; *green stones,* such as tourmaline (synthetic or genuine), emerald (synthetic or genuine), peridot (synthetic or genuine); *various other stones,* such as precious topaz, aquamarine, amethyst, any glass, any plastic, any quartz, doublets, triplets, any color genuine spinel.

Take heart, there are still some stones left. Some stones which will take heat are: *diamonds* (if not badly flawed); *rubies* (faceted, synthetic or genuine); *sapphires* (faceted, synthetic or genuine); *synthetic spinels* (any color), such as those used in class rings and inexpensive birth stone jewelry.

General Rules for Retipping

1. If you're not sure a particular stone will take heat, remove it. Do not take a chance.
2. Any stone which will take heat must still be protected from the air while it is hot. This is accomplished with a layer of boric acid, as explained later in the text.
3. A stone must be at room temperature before it can be immersed in any solution. If the stone is the least bit hot, it will shatter.
4. The entire piece of jewelry must be thoroughly cleaned before work can begin.
5. If the jewelry has any lead solder on it, all traces of this solder must be removed before the piece can be heated.

Materials and Tools

1. A pint of denatured alcohol (shellac thinner) in a covered glass container with a half-cup of powdered (not crystal) boric acid mixed into it.
2. A pickling solution consisting of one pint of tap water in a glass container with two tablespoons of Sparex #2 added to it. Read the instructions on the Sparex label carefully.
3. A pint of tap water in a glass container with two tablespoons of baking soda added to it. This is a rinse water for use after the piece of jewelry has been in the pickle. The baking soda will neutralize the acid.
4. Crosslocking tweezers. Any style which will hold the piece of jewelry securely in an upright position.
5. A poker. This is a piece of steel wire (a piece of coathanger wire is perfect) about six inches long and sharpened at one end.
6. Solder, 14k, easy-flow, the same color as the prongs you wish to rebuild. If the prongs are platinum, you must use white gold solder, as platinum solder will require too much heat for any stone. If the prongs are silver, you may use an easy-flow silver solder. Cut at least two pieces of solder for each prong you wish to retip. Each piece of solder should be about the same size as the prong. For instance, if the prongs are made of one-millimeter wire, each piece of solder, should be approximately one millimeter square.
7. Assorted needle files.
8. A cup burr just large enough to fit over the top of a retipped prong. Use this only if you want round tips.
9. A torch.
10. A soldering block. Asbestos or something of this nature will be fine.

Retipping Procedure

Clean the piece of jewelry thoroughly, preferably using an ultrasonic cleaner. When the piece is clean, examine it carefully to determine whether or not you want to heat the stone. If you decide to remove it, bend back only the number of prongs which will allow the stone to come out without being forced. Do not bend the prongs any more than is absolutely necessary. Remove the stone from your work area. If the stone is to stay in the setting, make sure it is tight before proceeding.

Grasp the piece in your crosslocking tweezers and dip it into the alcohol/boric acid solution. Put the lid back on the alcohol immediately and remove it from your work area. This solution is extremely flammable. Out of the way, it's less likely to cause an accident. Ignite the alcohol solution on the piece with your torch. When the alcohol burns away, a thin layer of boric acid will be left. While you are soldering, this powder will melt and form a glasslike coating over the stone and metal. This coating will prevent both heat discoloration of the metal and burning of the stone when soldering.

Put the tweezer-held piece on the soldering block so that the prongs are in an upright position. Spread the pieces of solder out on the soldering block so that no two pieces are touching. Now, adjust the torch to a small, blunt flame. Hold it in one hand and pick up the poker with the other. Heat a piece of solder until it forms a ball. Touch the ball with your poker, heating both until the solder sticks to the poker. This will happen very quickly.

Now, with the same torch adjustment, pass the flame back and forth across the stone to slowly heat it. With the solder now a small round ball, lay it on the stone, just touching the prong closest to the flame. This is done while the solder is still attached to the poker. Heat the prong until the solder flows from the poker to the prong. When this happens, remove the heat immediately. What you are trying to accomplish is to have the solder standing on top of the prong, replacing the metal which has worn away. If the solder flows down the side of the prong (and it sometimes does), you have used too much heat too long. Should this happen, or if the prong is still too small, just pick up another piece of solder with your poker and apply it to the prong in the same manner as above.

Note: When you are applying heat to the prong to make the solder flow, think of the torch as a paint brush. Back and forth, back and forth. Keep the torch moving at all times. In this way, you are always prepared to remove the heat the second that the solder starts to flow. Removing the heat quickly is the secret to successful retipping.

When the first prong has enough solder in the right place, proceed immediately to the next prong. To do this, turn either the entire soldering block or the tweezers holding the piece until the next prong is in the correct position, that is, closer to the torch side of your bench than any of the other prongs.

Continue around the piece, always shifting it in the same direction until all the worn prongs have been rebuilt. Let the piece cool off completely. When it has cooled to room temperature, put the piece of jewelry in the pickle for a few minutes. This will remove the boric acid and any fire scale which may have formed. Then rinse it in the soda-water solution and wipe dry.

If you have removed any stones, the above process is just the same, but you must now reset them. Simply put the stone back in its original position and bend the prongs back until the stone is secure.

With your files and burrs, give the top of each prong an attractive shape and blend the solder into the base of the prong. Take care not to touch the stone with the serrated edge of the file or with the burr. Even a diamond may chip when this happens. When the prongs are properly shaped, polish the piece as if it were new.

When you deliver this piece to your customer you will have done considerably more than save her a good bit of money (her gratitude will probably result in future sales for you), you will have extended the life of a treasured possession by many years. As you will be very well paid for this, everyone will be happy.

DIAMONDS: Myth, Magic and Reality, edited by Jacques Legrand, Crown, New York, 1980. 288 pp., $50.00 cloth

DIAMONDS: Myth, Magic and Reality is a wonderful picture book every goldsmith should have on their coffee table. With more than 420 full-color illustrations this unprecedented work is divided into four sections: "From Myth to Reality" examines ancient legends, travelogues, histories, records and documents. A fascinating account is given on each famous gem from the Hope Diamond to the Koh-i-noor. This section includes intriguing anecdotes as well as precise factual and technical information. The second section, "The Rough Diamond and Its Origins," focuses on the geology of the diamond. With accurate, colorful diagrams the reader is given a good understanding of actual sources and minerology of the gem. Also included is on-the-spot reporting of the mines of South Africa, India, Zaire, Brazil, Sierra Leone, Venezuela, Angola and Borneo. Section three, "From Rough Stone to Polished Gem," provides precise information on how to know and appreciate diamonds. Each of the four basic criteria—weight, clarity, color and quality of cut—is thoroughly and authoritatively discussed. The final section, "From Jewelry to Industry," examines all the applications of diamonds today. A section is devoted to fashion, beauty, elegance and pleasure. It features the historic as well as contemporary high-dollar examples.

Full of readable information and delightful illustrations this book is one that most people connected to the industry would like to own. The information gathered for the book comes from historians, geologists, prospectors, minerologists, gemologists, engineers, diamond cutters and jewelers, all of whom are authorities in their own fields. Although there are many books written on the subject of diamonds, very few include all four sections together under one cover. This is a book you can pick up and browse through, or alternatively use as a quick reference.

—Glenice Lesley Matthews

Jewelry Making for the Beginning Craftsmen by Greta Pack, Van Nostrand Reinhold, New York, $6.95 pb

This is an ideal book with which to introduce the young student to the basic techniques of jewelry making. The illustrations and explanations are clear, simple and accurate. The most useful part of the book is the information on tools and techniques. The jewelry projects themselves are a bit dated and are best viewed as a tool to demonstrate basic processes of jewelry making. All in all, the clear presentation of the basics makes the book worthy of being reprinted.

—Rosemay C. McKinney

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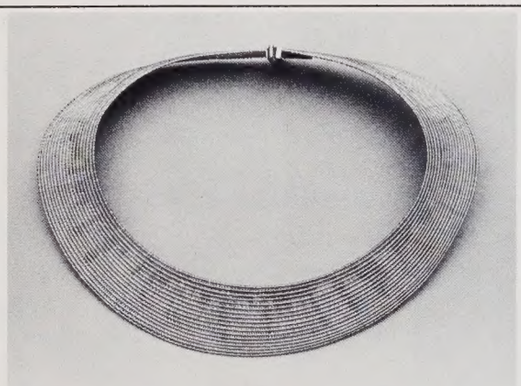

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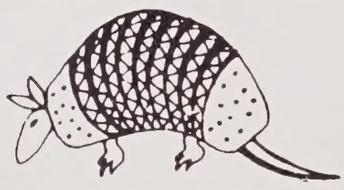

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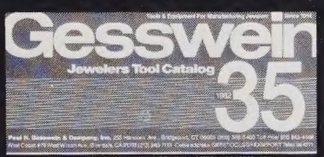

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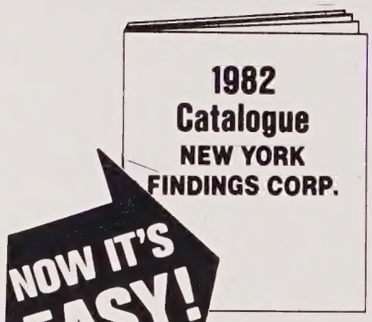

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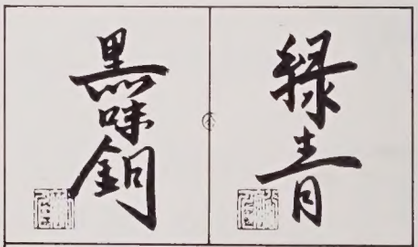

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